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Original Communications.

AN EXAMINATION OF SOME OF THE BEERS, OTHER MALT LIQUORS, AND WINES SOLD IN PHILADELPHIA.

By John Marshall, M.D., and Seneca Egbert, M.D.

THE marked increase in the use of beers and wines in this country within recent years, together with an actual decrease in the consumption of whiskey and stronger liquors, is certainly of good import in considering the welfare of the American people.

The quantity of fermented liquors, in contradistinction to distilled ones, brewed in the United States has increased from three million two hundred thousand barrels in 1860 to twenty-three million in the fiscal year ending June 30, 1887, while in the last-mentioned year the Internal Revenue Report as to "the spirits distilled from materials other than apples, peaches, and grapes" showed a decrease from that of the preceding year of over three million gallons.

Moreover, with the increased attention paid at the present time to dietetics by the medical profession, and the realization that the prescription of the milder liquors is often of benefit to certain of their patients, a quantitative determination of some of the constituents of the various malt liquors on the market would seem to be not altogether out of place.

The foregoing reasons, and the fact that until recently scarcely any systematic or extended analysis of American beers and malt liquors has been made, have led to the present work.

Since these analyses have been completed, however, a "Report on Fermented Alcoholic Beverages" has been published by the United States Department of Agriculture, which contains an account of the methods employed and the results obtained in the analysis of a number of beers purchased during the past summer in the open market in Washington, D. C., the work being under the supervision of Mr. C. A. Crampton, assistant chemist of the Department. This report also contains a summarized account of the work done by Dr. F. E. Englehardt in 1885, under the authority of the New York State Board of Health. According to the report, "Dr. Englehardt's analyses were made upon a very large number of samples, four hundred and seventy-six in all, including various kinds of malt liquor, porters, ales, and a weak beer sold under the name of weiss beer, which were collected from all over the State of New York, and were intended to furnish a good average representation of the beer retailed in the State." With these two exceptions, it has been impossible to obtain any account of extended work on the subject.

The fifty-five samples from which the accompanying analyses were made were purchased in the open market in Philadelphia, none being bought directly from the brewers, and in the majority of cases without the retailer knowing what use was to be made of them. Moreover, the beer was, with but few exceptions, the "draught" beer,—*i.e.*, beer drawn directly from the keg,—as opposed to bottled and export beer. The list includes the product of all the leading breweries in the city, of a number of minor ones, and of many noted breweries in other cities, and may consequently be taken to fairly represent the quality of beer sold to the individual consumer in the city of Philadelphia and in its vicinity.

MALT LIQUORS.

The kind of grain from which the malt is made, the proportion of malt to hops, the mashing and boiling, the kind of fermentation, and the extent to which the maltose is converted into alcohol,—all these have an influence in determining the variety of the malt liquor in the manufacture of which they are concerned.

American brewers apply the term ale to those liquors which are the product of upper or top fermentation,—*i.e.*, where the fermentation is carried on rapidly at a temperature above 50° F., and in which the yeast-cells and residue are thrown to the top of the liquid. In this upper fermentation there remains in the liquor a quantity of soluble gluten, which may cause, on exposure to the atmosphere, at least a part of the alcohol to be converted into acetic acid and thus give a sour liquor. Beer, the product of under or bottom fermentation, is made by a slower process. The wort, or extract of malt, is fermented at a temperature below 50° F., with free exposure to the air, by means of a yeast which produces oxidation by slow combustion. As a consequence less alcohol is produced, the products of oxidation are carried with this under yeast to the bottom of the vat as a sediment, there is but little gluten left to start the conversion of alcohol into vinegar, and the beer does not readily sour. Lager beer (so called from the German *lagern*, to store) means simply stored beer. From four to six months is considered sufficient time for ordinary beer to lie in the casks, though it is often sold much earlier, and sometimes kept as long as a year or more. Weiss beer is made chiefly from wheat malt, and is weaker in alcohol than ordinary lager. Bock beer is a stronger lager, made with about a third more malt, and possesses decidedly stupefying qualities. Porter has now come to mean a dark liquor, made partly from brown or black malt, the caramel in which gives the sweetness and syrupy appearance, and contains from eighteen to twenty pounds of solid matter to the barrel. Stout is a stronger porter, containing about twenty-six pounds of solid matter to the barrel. It is said that molasses is also used in the manufacture of porter and stout.

A good beer should be absolutely clear, sparkling, have a good body (which indicates a large proportion of dextrin to extract), and an aromatic bitter taste. It must have the sweet taste of malt and the fine aromatic flavor of hops. It should contain a certain percentage of carbon dioxide, which should be given off slowly with the formation of a thick, creamy froth, and, if the beer is made according to the so-called Bavarian standard, the constituents should always be present in certain known percentages.

In Germany the brewers follow fixed rules as to the amount of materials, the processes, time, etc., given to each brewing; consequently, though numerous analyses have been made of the various German beers, the per-

centage of alcohol, extract, etc., does not vary greatly in the products of the various breweries.

On the other hand, here in the United States, where each brewer is a law unto himself; where there are no restrictions, legal or otherwise; where the alcohol-producing or fermentescible substances used are so various, the percentages of the different constituents can be by no means uniform.

However, in most instances the amount of each of the constituents of the beer under consideration will fall within certain well-defined limits, and we are thus enabled to make an approximate comparison between the domestic and foreign products.

It is a matter of congratulation that American beers are at present being improved in taste and purity,—an indication coupled with the foregoing statistics, of an increased demand and consumption by all classes of the people.

The adulterations heretofore practised have been chiefly in the bitter principle, because of the failure of the hops crop and the consequent large increase in their cost. It is said that a number of substitutes for hops is offered to the trade, particularly picrotoxin and picric acid, but the genuine article is still necessary for good beer. Moreover, hops give the bitterness and peculiar aroma to beer, and precipitate and thereby remove certain albuminous matters that increase the tendency of a beer containing them to spoil. They also aid in the clarifying of the beer. And as hops have recently been much cheaper than they were heretofore, the adulteration is not believed to be practised at present to any considerable extent. Another sophistication, somewhat common, consists in the admixture of rice, hominy, or glucose with the malt, but the effect of this will be considered later.

Other foreign substances added to beer are for the purpose of preventing fermentation and to act as preservatives. Their use should be condemned and prohibited on general principles; for a good beer, properly made from malt and hops, will not spoil on keeping a reasonable length of time, and needs no such extraneous aid, and a beer to which such additions are necessary should not be sold to consumers. The substances thus used as preservatives are salicylic acid, sulphurous acid, and possibly borax. There is no evidence to show that either of the two last mentioned has been used to any extent in American beers. As to the salicylic acid, however, it is undoubtedly used to a considerable extent, but almost wholly in bottled or "export" beers, and almost never in keg beers. Therefore, inasmuch as nearly all the samples examined in this work were drawn from the keg, no examination was made to determine its presence.

But in the government work on this subject, done in Washington last summer, salicylic acid was found in seven of the thirty-two samples examined. These were all bottled beers,—one being an imported beer, the rest American. Inasmuch as salicylic acid is eliminated but slowly, and as it is liable to interfere with gastric digestion, and also to give rise to serious irritation of the kidneys, its presence, even in very small quantity, in an alcoholic beverage so universally used as is beer is certainly to be discountenanced, and should be restricted by proper legislative enactments and regulations. For a concise and convenient method for its determination and quantitative estimation, as well as for articles indicating its injurious effects on the human economy, the reader is referred to the aforementioned government report.

Bicarbonate of sodium is frequently added to beer for the purpose either of correcting an undue acidity of the beer, due largely to improper brewing, or of giving to the beer an increased percentage of carbon dioxide. As this substance itself can scarcely be considered harmful to the system, the uncertain and difficult analysis necessary for its determination was omitted.

A certain quantity of chloride of sodium is a normal constituent of all beers, but more may be added to the beer by the brewer, either to increase the thirst of the consumer or to conceal some objectionable taste in the beer. The English government has placed the normal limit of chloride of sodium at fifty grains to the gallon, or about 0.086 per cent., and treats any excess above that limit as an improper addition. No estimations of the sodium chloride were made in the present work. However, in the work at Washington none of the samples were found to overstep the above limit, though Dr. Englehardt, in his work in New York in 1885, found quite a large number of samples to contain an excess of chloride of sodium, one even having as much as four times the permissible amount.

Beer is not only a mild stimulant and a tonic, but if properly made from proper materials is also nutritious. While alcohol is in itself a direct cardiac stimulant, it is present in beer in such a small percentage that its effect on the

general circulation is but slight, while it probably acts as a direct aid to digestion by locally stimulating the gastric mucous membrane. Its tonic value is chiefly due to the hops-bitters present, though the phosphates also doubtless have some value in this respect.

The nutritious properties of beer will depend to a great extent on the percentage of total solids present, which latter will vary according to the substances and processes employed in the brewing.

Barley malt, malt of other grains, rice, hominy, and glucose are used, singly or in combination, the proportion of each depending upon the honesty of the brewer, or, as he may claim, the taste of his customers.

Barley malt furnishes not only maltose, dextrin, and inorganic salts, but also peculiar proteid principles, which not only impart an agreeable flavor to the beer, but are of considerable nutritive value, since these albuminous substances are readily taken into the blood in the presence of the potassium phosphate contained in the beer.

In the preparation of a rice beer the yeast is apt to degenerate, because of the quantity of the necessary nitrogenous substances present being insufficient to support the life of the yeast-cells. On account of this and the fact that a rice beer is sweeter than an ordinary malt beer, more hops are required. And also because of the absence of these proteid substances a rice beer "keeps better" than a malt beer, but is not so nutritious. Beer brewed from rice, hominy, and glucose lacks the aroma which a malt beer possesses. The former beer contains, of course, the carbohydrates, such as glucose and dextrin, also the mineral salts. Rice beers and the like also contain a smaller percentage of total solids or extract; consequently, one would suspect a beer containing a small amount of solid residue as having been made from rice or other inferior materials. And for the above reasons, also, such beers are less of a food and not so nutritious as those brewed from barley malt.

The total solids or extract should always be present in greater percentage than the alcohol. The extract contains all the soluble constituents of the malt and hops, partly pure and normal and partly metamorphosed, and also the products resulting from the process of fermentation. To the unchanged constituents belong the maltose, gums, dextrin, peptones, inorganic mineral salts, hops-bitters, hops-resin, and alkaloidal substances: to the metamorphosed constituents of the extract belong glycerin and the acids of the fat series.

As has been stated above, the percentage of alcohol in the beer will vary according to the materials from which the beer is brewed. There will also be a variation in the alcohol percentage according to the kind of fermentation, its rapidity and degree of completeness, and according to the presence or absence of other factors of minor account. Ordinary German beers contain from 2.5 per cent. to 4.0 per cent. of alcohol, while the stronger and export beers contain from 3.5 per cent. to 5.0 per cent. Analysis of the ordinary beer from the ten principal breweries of Munich show an average alcohol percentage of 3.53.*

A consideration of Table I. will show that the average American beer is somewhat stronger in this respect, though most of the finer products show a percentage below the average.

The quantity of soluble phosphates present in the samples examined was estimated in terms of phosphoric anhydride, P_2O_5. This estimation, along with that of the extract, should assist us in determining whether the beer was brewed from barley malt or other substances, since barley and similar grains contain more phosphates than rice, hominy, or glucose.

The percentage of phosphoric anhydride in heavy Bavarian or export beers is about 0.10 per cent., and in ordinary German beers is between 0.06 per cent. and 0.07 per cent. A beer containing less than 0.06 per cent. of P_2O_5 may be suspected of having been brewed from other materials than malt. According to Table I. the percentage of P_2O_5 in ordinary American beers is somewhat higher than that given in the German standard above. Whether this is due to peculiarities of the soil in which the grain is grown, the water used in the making of the beer, or to some other factor, is as yet undetermined.

The sulphates present in beer were estimated in terms of sulphuric anhydride, SO_3. A large percentage of sulphates tends to show that glucose has been used in the making of the beer, because commercial glucose contains a large proportion of calcium sulphate produced in the process of its manufacture, and which, as a rule, is not completely removed before sending the glucose into market. A slight percentage of sulphates will be found in a true malt beer, but not to such a marked

* Reischauer, "Chemie des Bieres," p. 333.

extent as in the case of a glucose beer. Sulphates exist in the grain normally; and they may also result from the sulphur compounds produced by the burning of coal in the malting, at the time when the germination is destroyed by heat.

Moreover, the water used in the making of the beer may contain a considerable amount of sulphates and other salts. In fact, the water supplied to Burton-on-Trent, where the greatest breweries of England are located, holds a large percentage of sulphates and carbonates in solution, and is thought to be especially valuable for use in brewing on this account. In this is found the reason for the apparently abnormal amount of SO_3 given in Table III. as belonging to some of the imported ales.*

Recapitulating and referring to Tables I. and II., we observe the following:

	Percentage of alcohol (by volume).		Percentage of extract.		Percentage of phosphates (as P_2O_5).		Percentage of sulphates (as SO_3).	
	Average	Range.	Average	Range.	Average	Range.	Average	Range.
Lighter and ordinary American beers....	4.85	3.4–5.75	5.51	3.7–7.7	0.092	0.055–0.126	0.0227	0.013–0.039
Lighter and ordinary German beers.....	3.55	2.5–4.0	.....	.....	0.066	0.06–0.07	.....	.....
Imported beer (bought in Philadelphia).	4.00	.....	3.84	.....	0.068	.....	0.0234	.....
Bock and heavier American beers.....	5.19	4.4–5.67	6.44	5.3–8.2	0.075	0.045–0.10	0.0246	0.018–0.031
Heavy German beers.....	.....	3.5–5 0	.....	.....	0.10	.....	.....	.....
Imported heavy beer (bought in Phila.)..	5.50	.....	6.82	.....	0.092	.....	0.0313	.....

In estimating the percentage of alcohol present in beer use was made of Malligand's Ebullioscope, which was especially valuable owing to the facility, rapidity, and accuracy with which the estimations could be made.

The principle of the instrument is that the boiling-point of a liquid will vary according to the percentage of alcohol which it contains.

Inasmuch as the extract present in the beer and the aldehydes, lighter ethers, and acids of the fatty series also alter the boiling-point,—the extract or solid matter raising it and the aldehydes, ethers, etc., lowering it,—it was found necessary to separate the alcohol by a preliminary distillation. This was done by slowly heating a measured quantity of the beer, rendered alkaline by sodium carbonate, in a flask connected with a Liebig's condenser till more than one-half of the volume of the beer was distilled over. By this means all of the alcohol was collected, the extract being left behind and the volatile aldehydes, etc., escaping condensation. The distillate was then diluted with distilled water up to the original volume of beer employed; consequently, the percentage of alcohol in the distillate is exactly the same as that originally present in the beer. All measurements of liquids in the above and subsequent processes were made when the liquids had a temperature of 15.5° C.

The above method we have found to be equally as accurate as the specific-gravity method by means of the picnometer, and requires decidedly less time.

The percentage of extract or total solids was obtained by evaporating a measured quantity of the beer, usually fifty cubic centimetres, to dryness in a weighed dish at 100° C. When thoroughly dried the dish and its contents was weighed, and the increase in weight over that of the dish alone in grammes multiplied by two indicated the percentage of total solids in the given sample of beer.

In determining the percentage of phosphates the uranium acetate volumetric method was employed, applied directly to the beer. By evaporating to dryness, incinerating, dissolving the residue, and then using the uranium acetate solution, the results might be a trifle more accurate; but the difference in results between the two procedures being so very slight,—about 0.003 to 0.005,—the gain in accuracy would hardly compensate for the extra time needed for the latter method.†

To fifty cubic centimetres of the beer 5 cubic centimetres of a sodium acetate solution containing free acetic acid was added, the whole heated to boiling, and the uranium acetate solution run in until a drop of the liquid caused a faint chocolate coloration with

* It is thought that in many of the imported ales calcium bisulphite or sodium bisulphite is added for the purpose of preventing fermentation; if this be so, part of the excess of SO_3 may come from this source.

† Elsner, "Die Praxis," etc., p. 89.

the indicator, potassium ferrocyanide. The uranium acetate solution being of such a strength that one cubic centimetre was equal to 0.010 gramme of P_2O_5, the number of cubic centimetres of uranium acetate solution required multiplied by 0.010 indicated the number of grammes of P_2O_5 in fifty cubic centimetres of the beer employed. This result multiplied by two gives the percentage of P_2O_5 in the beer.

At first the method employed in the estimation of the sulphates was to evaporate to dryness a measured quantity of the beer, incinerate, dissolve out the sulphates from the ash residue, acidulate with hydrochloric acid, and precipitate the sulphates as barium sulphate by the addition of dilute barium chloride solution in excess, finally collecting the precipitate on filter-paper, washing, drying, burning, and weighing.

Subsequently, the fifty cubic centimetres of beer itself were simply heated, acidulated with hydrochloric acid, and dilute barium chloride solution slowly added in excess, the resulting precipitate being collected, washed, dried, burned, and weighed as before. This latter method is much the more rapid, and as no difference in the results of the two methods was noticeable, it was adopted in the majority of cases. The amount of barium sulphate being thus produced, its equivalent in terms of sulphuric anhydride, SO_3, is easily computed, and the percentage of SO_3 determined by multiplying its weight in grammes by two.

Table I.—Light and Ordinary Beers.

Brewers and locality.	Percentage of alcohol by vol.	Percentage of extract.	Percentage of phosphates as P_2O_5.	Percentage of sulphates as SO_3.
Anheuser-Busch Co., St. Louis, "Faust," bottled	5.25	6.514	0.078	0.0141
Arnholt & Shaefer	4.77	4.890	0.093	0.0180
Baltz, J. & P.	4.37	6.629	0.089	0.0192
Bartholomay, Rochester, N. Y.	5.00	6.843	0.091	0.0209
Bergdoll, Louis	5.00	6.101	0.086	0.0167
Bergner & Engel	5.55	5.196	0.114	0.0232
" " "Tannhäuser"	4.76	5.104	0.095	0.0224
" " "Eimbecker," bottled	4.80	5.338	0.092	0.0246
Best, Phil., Milwaukee, Wis.	4.74	6.757	0.086	0.0128
Betz, John	5.75	6.555	0.120	0.0284
Burg & Pfaender	5.00	5.351	0.118	0.0305
Class, Chas.	4.75	4.834	0.080	0.0215
Clausen, H., New York	4.55	4.608	0.092	0.0270
Conrad, Jacob	5.25	5.422	0.071	0.0241
Continental Brewing Co.	5.00	6.868	0.073	0.0191
Eble & Herter	4.65	5.122	0.090	0.0254
Ehrets, Geo., New York	4.90	6.257	0.090	0.0168
Enterprise Brewing Co.	5.70	4.558	0.112	0.0198
Erdrichs, Andrew	4.85	5.298	0.095	0.0177
Esslinger, George	5.70	4.826	0.108	0.0296
Flach, Henry	4.89	3.986	0.098	0.0364
Germania Brewing Co., "Munich"	5.05	3.723	0.094	0.0387
" " " "Vienna," bottled	5.00	4.388	0.103	0.0305
Haisch, Christian	4.80	4.340	0.098	0.0286
Hornig, John N.	4.70	4.548	0.098	0.0165
Keller, George	4.95	5.571	0.109	0.0294
Kohnle, Joseph	5.25	5.973	0.078	0.0145
Lieberman, Allentown, Pa.	4.20	5.320	0.091	0.0209
Miller, John C., Germantown	4.20	5.356	0.106	0.0275
Müller, Henry	4.30	6.512	0.074	0.0160
Poth, F. A.	4.75	6.650	0.082	0.0087
Prospect Brewery	3.40	5.995	0.050	0.0150
" " "Budweis"	4.55	5.206	0.055	0.0151
Rothaker, George	4.35	4.947	0.095	0.0225
Schemm, Peter	4.50	4.943	0.093	0.0180
Schmidt, Christian	4.75	6.180	0.096	0.0290
Schoettle, John P.	3.65	5.894	0.071	0.0241
Sonnemair, P.	4.05	4.914	0.074	0.0252
Spaeth, Krautter & Hess	5.13	5.648	0.104	0.0183
Theis, C.	5.25	5.120	0.111	0.0260
Weihman, John	4.70	5.772	0.100	0.0202
Weisbrod & Hess	5.45	6.404	0.096	0.0290
Welde & Thomas	4.95	4.558	0.100	0.0268
Wolf, Robert	5.30	4.841	0.108	0.0300
Imported, Bremen, "Kaiser," bottled	5.72	3.825	0.056	0.0203
Imported, pale "Thüringen," keg	4.00	3.841	0.068	0.0234
Averages (excluding imported)	4.85	5.510	0.0921	0.0227

Table II.—Bock and Heavier Beers.

Brewers and locality.	Percentage of alcohol by vol.	Percentage of extract.	Percentage of phosphates as P_2O_5.	Percentage of sulphates as SO_3.
Baltz, J. & P.	4.40	5.346	0.060	0.0288
Bergdoll, Louis	5.40	8.176	0.045	0.0203
Bergner & Engel	5.67	6.159	0.100	0.0195
" " "Salvator"	5.16	6.556	0.126	0.0262
Betz, John	5.40	6.226	0.064	0.0308
Clausen, H., New York	5.50	7.698	0.085	0.0182
Rothaker, George	4.73	5.257	0.090	0.0280
Weisbrod & Hess	5.25	6.241	0.082	0.0270
Imported, dark "Thüringen"	5.50	6.819	0.092	0.0313
Average (excluding imported)	5.19	6.457	0.755	0.0246

In the main, what has been said above concerning beers may also be said of the ales. Ale should contain more alcohol and more extract than beer. Only one of the so-called "Burton" ales of American manufacture is at all similar in flavor and composition to the imported "Burton." The others are simply a slightly heavier form of the lighter ales.

Table III.—Ales, Etc.

Brewers.	Percentage of alcohol by vol.	Percentage of extract.	Percentage of phosphates as P_2O_5.	Percentage of sulphates as SO_3.
Betz, John F., "Pale"	7.70	2.888	0.090	0.0500
" " "India Pale"	7.75	4.378	0.081	0.0530
" " "East India Pale"	8.05	4.014	0.097	0.0566
" " "English Pale"	7.35	4.142	0.087	0.0530
" " "Burton"	7.25	4.093	0.090	0.0520
Continental Brewing Co., "Pale"	5.80	6.320	0.076	0.0218
Magee, "Pale"	6.80	3.178	0.058	0.0306
" "Burton"	7.75	3.926	0.124	0.0354
Massey, Wm., "XXX" or "Burton"	6.75	3.708	0.112	0.0390
" " "Pale"	6.75	5.088	0.112	0.0500
Smith, Robt., "Pale"	5.95	5.839	0.081	0.0235
Average of above ales	7.08	4.140	0.092	0.0420
Imported, Bass & Co., "Pale," bottled	6.65	4.716	0.060	0.1204
" " "Burton," keg	11.40	10.074	0.132	0.1140
Continental Brewing Co., "Burton"	10.90	9.365	0.192	0.0482
Betz, John F., "Stout"	6.40	7.140	0.108	0.0468
Imported, Guinness's Dublin "Stout," bottled	7.40	5.921	0.128	0.0381

By reference to Table III. we have the average percentages, as follows:

	Percentage of alcohol by volume.		Percentage of extract.		Percentage of phosphates as P_2O_5.		Percentage of sulphates as SO_3.	
	Average	Range.	Average	Range.	Average	Range.	Average	Range.
American pale ales	7.08	5.8–8.0	4.14	2.88–6.32	0.092	0.058–0.124	0.042	0.022–0.057
Imported pale ale, Bass & Co.	.....	6.65	.....	4.72	.....	0.060	.....	0.121
American "Burton," Cont'l Brw'g Co.	.....	10.90	.....	9.37	.....	0.192	.....	0.048
Imported "Burton," Bass & Co.	.....	11.40	.....	10.07	.....	0.132	.....	0.114
Imported Stout, Guinness	.....	7.40	.....	5.92	.....	0.128	.....	0.038

WINES.

While occupied with the foregoing work it was thought advisable to make an estimation of the percentage of alcohol, extract, and sugar in some of the American wines now on the market. This was done, and the results obtained are appended in Tables IV., V., and VI.

Extensive work in this line has already been done under government auspices at the Department of Agriculture in Washington, and by Professor E. W. Hilgard, of the University of California, and the results have been made public in the report of the above Department for 1880, and more recently in the one for 1887, already referred to in the remarks on beer analysis.

The forty-three samples of wine examined in the preparation of this paper were procured from several of the principal dealers in native wines in this city, and were, as far as could be ascertained, the same as are sold to customers under their respective titles and as pure American wines. Consequently, though limited in number, they may be taken as the average of those sold at such places, and as being as near the mark of purity as can commonly be obtained in this city.

It must be remembered that, as with the beers and ales, no chemical analysis nor tabulation of constituents can give complete or definite information as to certain properties of the wine,—viz., the bouquet, body, flavor, etc., the presence or absence of which has much to do with making a wine good or bad, palatable or unpalatable.

The most that can be done is to furnish some data which, together with personal trial of the different products, will enable one to determine whether a wine has been properly made, whether attempts have been made to sophisticate or "improve" it, and whether this or that one is most desirable or best suited to the requirements of the user.

With the above considerations, some of the wines have been found to be of excellent quality; the majority of them are good and pure, while some few have evidently received additions, such as sugar, spices, and substances which are deleterious to general health. But no extended examination of the wines was made to determine the degree of this sophistication.

Much will also depend on whether the wine has been made from ripe or unripe fruit, as to whether fermentation has been properly completed or hastened and incomplete, the kind of fermentation,—top fermentation yielding an inferior product as compared with that of bottom fermentation,—and as to whether sufficient time has elapsed to allow the impurities of the wine to be separated and to sink to the bottom and sides of the casks.

In dry wines, if the fermentation has not been properly completed, and the sugar has not been converted into alcohol as far as possible, further oxidation is apt to occur, part of the alcohol becomes converted into acetic acid, more of the sugar into alcohol, and the wine acquires a sour, acetous taste. This was observed in the case of wine No. 18, Table VI., the first sample of which was bought June 10, 1887, the analysis showing 10.50 per cent. of alcohol, 14.76 per cent. of solids, and 13.33 per cent. of sugar; while the second sample of the same vintage and from the same maker, bought five and a half months later,—November 24, 1887,—showed 12.50 per cent. of alcohol, 7.13 of solids, and 6.33 of sugar, and had a most decided acetous taste.

The methods employed in determining the amount of alcohol and extract present were the same as those used in the work with the beer.

Where a wine contained little or no extract and sugar the distillation preliminary to the estimation of alcohol was dispensed with. But where extract or sugar was present in any considerable quantity the wine was first distilled. The value of this precaution was seen when comparative estimations of the alcohol in the same wine, distilled and undistilled, were made. The aldehydes, etc., present in the undistilled wine were in some instances sufficient to cause a variation of as much as one per cent. in the alcohol percentage. Where these were removed, the results obtained at different times by means of the ebullioscope were found to stand very close comparison with one another, and not to vary much from those furnished by the government chemist for the same wines, though of different years, in the reports already mentioned.

The percentage of grape-sugar in the wine was determined by means of Fehling's solution.

Where the percentage of extract is but slightly greater than that of sugar it is but fair to conclude that the wine is very nearly, if not altogether, pure. But where the amount of extract is largely in excess of the quantity of sugar we may justifiably conclude that the wine has been subjected to some sophistication or so-called "improvement" not exactly natural in its character.

Table IV.—Dry White Wines.

Wines.	Vintage.	Where made.	Percentage of alcohol by vol.	Percentage of extract.
1. Chasselas	1883	California.	11.50	1.808
2. Catawba	1885	Ohio.	12.00	2.409
3. Delaware	1884	Virginia.	13.05	2.224
4. Dry Delaware	1871	New York.	11.60	1.875
5. Extra Dry Delaware	1870	New York.	11.95	2.175
6. Dry Muscatel	1881	California.	11.20	1.518
7. Elvira	1883	New Jersey.	14.00	1.637
8. Gutedel	1882	California.	11.65	1.814
9. Mountain	1867	California.	13.40	1.996
10. Nectar	1883	New Jersey.	12.85	1.747
11. Riesling	1876	California.	12.10	2.046
12. Traminer	1867	California.	11.75	1.960
Averages			12.25	1.934

Table V.—Dry Red Wines.

Wines.	Vintage.	Where made.	Percentage of alcohol by vol.	Percentage of extract.
1. Black Rose	1883	New Jersey.	12.90	2.531
2. Burgundy	1883	California.	10.80	2.707
3. Claret	1876	New York.	7.75	2.155
4. Claret, A	1884	New Jersey.	12.50	2.358
5. Claret, B	1885	New Jersey.	12.15	2.060
6. Dry Medium (Dark)	1876	New York.	9.45	1.813
7. Flower	1882	New Jersey.	12 80	2.358
8. Norton	1883	New Jersey.	11.65	2.376
9. Ruby	1883	New Jersey.	12.60	2.084
10. Zinfandel	1884	California.	12.50	2.587
Averages			11.51	2.303

NOTE.—Not more than a mere trace of sugar was found in any of the wines of Tables IV. and V.

Table VI.—Sweet Wines, Etc.

Wines.	Vintage.	Where made.	Percentage of alcohol by vol.	Percentage of extract.	Percentage of grape sugar.
1. Angelica	1883	California.	17.10	15.166	14.085
2. Madeira	1875	California.	16.50	7.004	5.387
3. Malaga	1875	California.	16.80	10.639	9.259
4. Orange Wine	1883	Florida.	6.50	22.320	17.857
5. Port	1883	California.	17.65	8.474	7.937
6. Port	1882	New Jersey.	17.55	11.136	10.000
7. Port	1885	Ohio.	14.65	13.962	11.111
8. Port	1876	New York.	12.30	12.135	11.111
9. Sherry	1883	California.	17.45	3.471	2.703
10. Sherry	1882	New Jersey.	15.25	9.594	4.505
11. Sherry	1876	New York.	13.00	11.483	10.309
12. Sweet Delaware	1870	New York.	13.25	8.855	8.333
13. Sweet Catawba	1885	Ohio.	15.35	16.871	10.905
14. Sweet Delaware (Dark)	1870	New York.	13.80	11.923	11.236
15. Sweet Muscatel	1883	California.	18.15	15.663	14.286
16. Tokay	1875	California.	15.05	6.144	5.495
17. Tokay (Red) Scuppernong	1884	N. Carolina	10.85	11.893	10.870
18. Tokay (White) Scuppernong	1884	N. Carolina.	10.50	14.762	13.333
			12.50	7.130	6.333
Averages			14.45	11.507	9.740

Table VI.—Sweet Wines, Etc.—Addenda.

	Vintage.	Where made.	Percentage of alcohol by volume.	Percentage of extract.	Percentage of grape sugar.
Champagne, "Eclipse"	1886	California.	11.00	7.870	6.410
Champagne, "Extra Dry"	1886	New Jersey.	12.60	7.969	5.618
Brandy	1884	California.	47.80	0.111	None.

By reference to Tables IV., V., and VI. it will be seen that the average and range of percentage for the alcohol, extract, and grape sugar in the different classes of wine are as follows:

	Percentage of alcohol by volume.		Percentage of extract.		Percentage of grape sugar.	
	Average.	Range.	Average.	Range.	Average.	Range.
Dry white wines	12.25	11.20 14.00	1.934	1.518 2.409		
Dry red wines	11.51	7.75 12.90	2.303	1.813 2.707		
Sweet wines	14.43	6.50 18.15	11.507	3.471 22.320	9.740	2.703 17.857
Champagnes	11.80	11.00 12.60	7.919	7.870 7.969	6.014	5.618 6.410
Brandy	.....	47.80	.....	0.111		

CHEMICAL LABORATORY, MEDICAL DEPARTMENT, UNIVERSITY OF PENNSYLVANIA.

URECHITES SUBERECTA.

AN EXPERIMENTAL RESEARCH BY DR. MINKIEWICZ; COMMUNICATED BY PROFESSOR R. KOBERT, DIRECTOR OF THE PHARMACOLOGICAL INSTITUTE IN DORPAT, RUSSIA.

THROUGH the kindness of Messrs. Parke, Davis & Co. in supplying me with the preparation of *Urechites suberecta*, a plant already to a certain extent investigated in 1880 by Dr. Isaac Ott, and in 1885 by W. Vowinkle, the following experiments were rendered possible:

The finely-powdered drug was suspended in distilled water, 1 part to 10, and a number of times raised to the boiling-point for half an hour. The dark brown decoctions so formed were mixed together and saturated with neutral acetate of lead solution, and the clear brown filtrate of the lead precipitate was freed from lead with sulphuric acid, and then agitated six or seven times with benzine, and finally three times with amyl alcohol. The benzine and amyl alcohol extracts were then subject to distillation, the benzine and alcohol being recovered in great part, and the residue remaining in the retort thoroughly dried in a glass capsule, so leaving a "benzine body" and an "amyl-alcohol body."

The residue of the drug remaining after the extraction by decoction was then pressed and dried, and, on exhaustion with strong alcohol, yielded a dark green tincture, which was likewise precipitated by alcoholic solution of neutral acetate of lead and the filtrate freed from lead by means of sulphuretted hydrogen. On evaporating the solution, which was now bright yellow, a substance remained which is readily soluble in benzine, and which appears to be identical with the benzine body already referred to. Both of these bodies mixed together formed a yellow resin, with a vanilla-like odor and a bitter taste. This resin readily melted by heat, but on keeping became brittle, and might readily be rubbed up to a bright green powder. It is readily soluble in ether, chloroform, benzole, alcohol; partially soluble in bisulphide of carbon and caustic soda; with difficulty soluble in petroleum-ether; and almost insoluble in water. The alcoholic solution possessed a marked acid reaction; when boiled with acids no sugar was formed. It is non-nitrogenous, and without doubt a resin acid (*Harzsäure*).

The amyl-alcohol body was of a dark brown color, unpleasant odor, and bitter taste. It melts on heating, and when cold is with difficulty pulverized. It is almost insoluble in

water, in chloroform, ether and petroleum ether, and benzine. On the other hand, it is readily soluble in alcohol. It readily dissolves in water containing a certain amount of sodium hydrate, and then forms a brown fluid. When this solution is boiled with dilute sulphuric acid a peculiar rancid odor is developed, and the body splits into sugar and a new resinous substance. The amyl-alcohol body is, therefore, a glucoside.

These substances to a certain extent agree with the three substances—urechitin, urechitoxin, and amorphous urechitoxin—isolated by Bowrey. There are, however, certain points of contrast, so that we do not regard them as identical with these substances. These attempts at a chemical analysis of these substances are, we believe, worthy of confidence, since we are indebted to Professor Dragendorff for valuable assistance in their prosecution.

Physiological Action.—For a frog weighing about forty grammes (about 1 drachm) .0002 to .0003 gramme ($\frac{1}{300}$ to $\frac{1}{200}$ grain) of the resin acid—that is, the benzine body—forms the lethal dose. The toxic symptoms are sluggishness, suppression of reflexes, and general paralysis; in the latter stage of the poisoning the heart is arrested, movements of vomiting and fibrillar contractions usually occur, but by no means always.

In experiments made on warm-blooded animals it was determined that the benzine body and the amyl-alcohol body differed only in the degree of their action, the benzine body being much the more poisonous, so that the difference is, therefore, quantitative and not qualitative. Vomiting in cats and dogs is the invariable symptom which follows the administration of this poison, while nausea, salivation, diarrhœa, general muscular weakness, inco-ordination of movement, sleepiness, fibrillar muscular twitching, slowing of the pulse, dyspnœa, and finally death, accompanied by convulsions, from arrest of the heart. If a large dose is given, death rapidly follows, without this sequence of symptoms alluded to above, perhaps only vomiting and convulsions appearing. From doses which are not fatal recovery takes place after about two days of constant vomiting. Post-mortem examination on animals who have already undergone the most acute symptoms of poison reveals no evident alteration. In subacute poisoning, on the other hand, excessive hemorrhages invariably occur under the endocardium of both the left and right heart. In addition the mucous membrane of the stomach and intestine (especially in the duodenum, upper part of the jejunum, at the ileocæcal valve, and in the large intestine) is always swollen, reddened, and ecchymosed. The kidneys are usually hyperæmic. On microscopic examination, intra-fibrillar hemorrhages may be recognized in the heart, and the striation of the muscular fibres obliterated at different points. In the intestine the blood-vessels are found to be dilated and the submucosa filled with extravasations. In the kidneys the capillaries are widely dilated, the epithelial cells of the convoluted tubuli often turbid and their lumen obstructed by masses of flaky exudation.

Administered subcutaneously, the lethal dose of the resin acid for cats amounts to the $\frac{1}{100}$ to $\frac{1}{64}$ of a grain for every two pounds of body weight (.006 to .001 gramme per kilo).

From experiments made on the isolated vessels of living organs, after the method of Kobert and Thompson (described in the THERAPEUTIC GAZETTE for 1887, pp. 10, 82, 370), it was determined that the glucoside (the amyl-alcohol body) in a dilution of 1 : 200000, led to the contraction of vessels in warm-blooded animals. As to the mode of production of this contraction, which is not identical to that produced by the members of the digitalin group, we must refer the reader for details to the inaugural thesis of Dr. Minkiewicz, which will be published in the *Arbeiten des Pharmakologischen Institutes zu Dorpat*, herausgeben von Professor Kobert (Stuttgart, Enke).

Both poisons are without action on the isolated nerve and muscles of the frog's extremities. The action of the urechites poison on the isolated heart was studied in the case of the frog by means of Williams's apparatus, devised by Dr. Francis W. Williams, of Boston, for maintaining circulation through the heart, and in mammals by means of the kymographion. In these experiments we were able to confirm, as stated by the early experimenters, the production of a marked slowing of the heart's action. In the frog's heart this is produced by paresis of the excito-motor ganglia, and not through irritation of the inhibitory apparatus. Later in the poisoning a weakening of the muscular fibre also occurs. In the case of mammals, whose heart is still connected with the central nervous system, the phenomena are more complicated. Here, also, there occurs a considerable slowing of the pulse, but this may be prevented by previous administration of

atropine or section of the pneumogastrics, and depends, therefore, on central vagus irritation. But even after prevention of this central vagus irritation by means of atropine, large doses again produce slowing of the pulse, entirely similar to that observed by means of Williams's apparatus on the frog.

The vomiting, which so constantly follows the use of this drug, is of central origin, since it is produced quite as constantly from subcutaneous application as by introduction into the stomach. Unfortunately, there does not seem to be any possibility for the therapeutic employment of the urechites poison; but, on account of its very great poisonousness, it, like so many others of the family of Asclepiadæ, is of the highest toxicological interest. We were entirely unable to confirm the statement of Vowinkle that the urechites poison is an antidote of curare.

For many further special pharmacological details, the reader is referred to the paper to be published by Dr. Minkiewicz.

THE HYPODERMIC USE OF COCAINE IN MIGRAINE AND BRONCHIAL ASTHMA.

By Thos. D. Dunn, M.D., West Chester, Pa.

IN October, 1886, while suffering from an attack of migraine, I took hypodermically 1¼ grains of cocaine hydrochlorate. In about two minutes complete relief was obtained. The physiological effects were decided, but there was no apprehension of danger from an overdose. Restlessness and excitability were marked, and all the reflexes were exaggerated, especially the knee-jerk. It was impossible, even by a strong effort of the will, to lie or sit quietly. My mind was clear and active. Ideas rapidly presented themselves, and I fancied there was unusual versatility of expression. The pulse was not at first affected, but soon became quickened, and there was a slight tendency to palpitation. The respiration was labored and sighing. One remarkable feature was observed which I have been unable to find mentioned by writers on its physiological effects,—namely, the power to suspend respiration for some time without the usual discomfort. I could hold my breath for two minutes by the watch, and when I recommenced breathing it was not hurried or altered in any way. The muscles of the jaw were firmly contracted, but the mouth could be opened without difficulty. In an hour or two the mental and reflex excitability passed off, leaving a slight feeling of exhaustion. The passage of a large quantity of urine followed, which was pale and of low specific gravity.

There was a slight heaviness of the head next morning, but none of the severe pain of the night before, when the drug was taken. Dr. Price has since administered it to me in a number of attacks with uniformly good results. The bromides and morphine would give relief, but the attending sickness and weakness would keep me from work from twelve to twenty-four hours. At present the attacks rarely occur oftener than once in two or three months, and I am frequently able to resume work in an hour or two after the injection. Formerly they recurred every ten days or two weeks.

I have used cocaine hydrochlorate in a number of cases of migraine.

Mrs. B., aged 50, has been a sufferer from hemicrania of the right side for twenty years, and has tried almost everything with little or no benefit. I have injected from ½ to ¾ grain of cocaine some thirty-five times during the past eighteen months. It has given her more relief than any other medication, breaking the paroxysms, and often lengthening the interval between them. Usually relief has followed a single dose. After each injection there was some exhaustion, but less than if the attack had been allowed to run its course. The patient usually got up the next day. The prominent symptoms were great loquacity, reflex excitability and restlessness, slight præcordial distress and palpitation, and the ability to suspend breathing for comparatively long periods. The mouth was tightly closed, but could be easily opened. The pulse was quick, and the surface of the body cool and pale. To overcome these unpleasant effects of the drug, a teaspoonful of the aromatic spirits of ammonia was given immediately after the injection with some benefit. On account of the wakefulness and restlessness it induced, and the following exhaustion, I was about to abandon the cocaine treatment, when from ½ to ⅛ grain of morphine was combined with the injection. This counteracted largely the objectionable features of the cocaine, without the horrid sickness of morphine. Occasionally $\frac{1}{120}$ to $\frac{1}{60}$ grain of atropine was added.

Mr. C., aged 45, has suffered from migraine for ten years, and was often compelled to resort to ½ grain of morphine. He now finds complete relief from ⅛ to ¼ grain of morphine

and ¾ grain of cocaine. This acts more promptly, and without sickness or much depression, and he is able to resume his professional duties in a few hours after taking the injection. The attacks are occurring less frequently.

Dr. Isaac Massey, of West Chester, hands me the following notes of cases in which he used cocaine at my suggestion:

"Miss B., aged 35, inherits a weak constitution from her mother, who has also suffered for forty years with neuralgia.

"For the last fifteen years the patient has had attacks of migraine, confined mainly to the right side of the head, always attended with distressing nausea and prostration. These attacks have occurred every twelve or fourteen days, and required ½-grain doses of sulphate of morphine hypodermically administered, and she suffered afterwards with sickness and itching of the skin for at least twenty-four hours. For the last six months I have been using morphine, ⅛ grain, with ½ grain cocaine hydrochlorate; the attacks are less frequent, not so severe, and unattended by the former unpleasant symptoms following the use of morphine. The attacks are now three weeks apart, and only require ¼ grain morphine with ½ grain cocaine to give relief.

"Miss C., aged 42, has had violent attacks of migraine every ten days or two weeks for the last ten years, attended with great prostration and sick stomach. ½-grain doses of morphine, with $\frac{1}{120}$ grain atropine, would relieve the pain, but were followed by unpleasant symptoms, and the patient would not be able to be up for two or three days after the pain had subsided. For the last five or six months I have been using ⅛ grain morphine sulphate, ½ grain cocaine, and $\frac{1}{120}$ grain atropine. This injection gives almost instant relief, with no unpleasant after-effects, and the patient is able to be up next day. The attacks are now three weeks apart and not so severe."

The effect of cocaine on respiration, which I have previously mentioned, induced me to try the drug in a troublesome case of bronchial asthma.

The relief of the dyspnœa was almost instantaneous, but when subsequently given it was found that unless absolute rest was enjoined, the bronchial spasm would return in an hour or two, and sometimes even with this precaution.

If the attack was associated with more or less bronchitis, only temporary benefit would be derived from the cocaine injection.

At first the aromatic spirits of ammonia was given to counteract the heart disturbance, but latterly the cocaine has been given in combination with morphine, which has not only proven more efficacious, but largely corrects the disagreeable symptoms heretofore described. Though I have administered it not less than sixty times in three cases of asthma, it has never been necessary to give more than $\frac{1}{12}$ to ⅛ grain of morphine and ¼ to ½ grain of cocaine. Seldom has it been necessary to repeat the dose to break up an attack. One case which formerly required from three to four days to recover from an attack, by taking the above dose in the evening, will pass a comfortable night, and be around the house in the morning, whereas, after morphine alone, twenty-four hours would be passed in morphine sickness. In no instance has there been a desire for a repetition of the dose when the exhilarating effects passed off, or that peculiar feeling of wretchedness following the use of opium.

This treatment is not intended to supplant the fumes of stramonium and nitre-paper, which so often break up an attack of asthma without a resort to any internal medication.

But every physician meets with cases where these milder measures afford little or no relief. He then resorts to the hypodermic use of morphine, or to some of the nauseating depressants, and, after several days of suffering, his patient is able to be about.

It is under such circumstances that the cocaine-morphine injection gives instant relief to the dyspnœa, with a great saving of time and suffering.

Dr. Mosler (*Deutsche Medicin. Wochenschrift*, No. 16) published in 1886 the results of the use of a five-per-cent. solution of salicylate of cocaine hypodermically in nervous asthma. He obtained good results. The dyspnœa was relieved, the duration of the attack shortened, and the interval between attacks prolonged. Aside from this I have seen no reports of the subcutaneous use of cocaine for nervous asthma. I have not seen the original article, and my attention was not called to an abstract until the first of January, 1887, three months after I had commenced its use. I cannot satisfactorily explain the manner in which cocaine relieves asthma. Had all the attacks in which it was administered been due to bronchial irritation, the result of cold, dust, or atmospheric changes, a reasonable explanation would be found in its paralysis of the irritated sensory nerves. It was, however, equally efficacious

in attacks due to exhaustion or nervous excitement.

As relief is obtained while reflex action is exalted it cannot be due to paralysis of either the sensory or motor nerves, which, according to Nikolsky and Ott, follows their increased functional activity. One thing is certain, in moderate doses it acts as a brain stimulant, which effect has been so graphically described by Montegazza. It may, therefore, act as caffeine, which sometimes relieves asthmatic paroxysms.

According to Von Anrep cocaine kills by paralysis of respiration, the heart continuing to beat after breathing stops.

The depression of the respiratory centre may precede that of other centres, and its failure to so quickly respond to stimuli or exciting causes relieves the muscular spasm of the bronchioles. This view is supported by the ability to suspend respiration for long periods after taking the drug. In other words, the respiratory centre is less sensitive to imperfectly oxygenated blood.

Observers on its physiological action agree that it raises arterial pressure by contraction of the arterioles, the result of stimulation of the vaso-motor centre in the medulla. If we are ready to accept the theory recently advanced by Weter, that asthma is due to the sudden swelling of the bronchial mucous membrane, the result of the dilatation of its blood-vessels produced through the agency of the vaso-motor nerves, this theory will explain the action of the drug in asthma. But I think the profession is not ready to accept his opinion in preference to the spasm theory of Biermer and his supporters.

Further observations are certainly required to satisfactorily account for the relief to the dyspnœa it so promptly affords. The peculiar sense of calm, the insensibility to fatigue, and the increase of bodily and mental activity which all observers concur in ascribing to cocaine, doubtless explain the relief it affords in sick headache. Owing to its stimulant action on the vaso-motor centre in the medulla it is *a priori* especially indicated in the angio-paralytic form of the disease described by Eulenberg.

While I have used it in two cases where the phenomena he ascribes to this form were present, it was equally beneficial in two others where they were not. In these the attacks seemed more of the nature of a neuralgia, at least the pain began in the supra-orbital nerve, and then spread over the top of the head.

It is not claimed that this treatment is in any sense a specific for migraine and bronchial asthma, but that it will add materially to our resources in the management of these troublesome affections.

A word as to the cocaine habit, of which so much has been written in the medical and secular press. Dr. Hammond denies the existence of a well-pronounced case of cocaine habit, the patient being unable to stop if he chose to do so. He mentions a case where he injected 5 grains a day for months for the opium habit. It overcame the opium habit, and the patient failed to acquire that of cocaine. Dr. Mattison, of Brooklyn, has had seven cases of cocaine habit—five physicians and two druggists—who began taking the drug in small quantities. Dr. Hughes, of St. Louis, claims that most of the cases of cocaine habit are mixed cases of opium, alcohol, or ether inebriety, combined or alternating. Physicians addicted to the use of the drug are unreliable in their statements, often do not stick to the drug exclusively, and may have been old alcoholics or opium-eaters. Opium is a much more agreeable stimulant, and most cases evidently try to return to its fatal bliss. While there is a wide variance in the opinions of Dr. Hammond and Dr. Mattison in regard to the cocaine habit, I think, from studying the reported cases, that the danger has been exaggerated. Dr. Schmidt, at the German Congress of Physicians and Naturalists, reported some cases of cocaine-morphine habit, and it was the general opinion that pure cocaine addiction is rare, but that the cocaine-morphine habit is not so, and is very destructive and pernicious. One thing is sure, the danger from its use is infinitely less than from opium, and, while we should recognize the possible existence of a pure cocaine habit, I think we do injustice to this valuable agent and to our patients in hesitating to use it on this account.

COCILLAÑA BARK (SYCOCARPUS RUSBYI, BRITTON)—A PROPOSED NEW REMEDY FOR CATARRH.

By H. H. Rusby, M.D., New York.

THIS interesting medicinal bark was discovered by the writer a year or two since while travelling through Bolivia. The application here proposed, while resting on theoretical grounds, is entirely scientific, being based on its powerful and unmistakable physi-

ological action, which, similar in some respects to that of ipecac, is yet sufficiently distinct from that, and from all others, to constitute a drug of an entirely new action, one which will not fall into line with any other. That it is used in its own country solely as an emetic is due to the rude habits of the people, who recognize only the coarsest properties of drugs, and who rarely look for any but a cathartic or an emetic action. Accustomed, like all savage and half-civilized people, to an irregular food supply, they may be half starved for several days, and then, upon the accession of a bounteous supply, they will gorge themselves to an extent which almost leads the observer to doubt his own vision. The discomfort which frequently follows leads to the use of emetics, so that this class of remedies is in high repute among them, and embraces drugs which, while agreeing in the production of this one result, yet represent actions very distinct from one another.

I had heard many reports concerning Cocillaña before encountering it, some of them of the most fabulous character, both as to its botanical nature and its medicinal virtues. The facts, however, seemed to be that it was a powerful emetico-cathartic and expectorant, similar in its effects to ipecac, and dangerous when taken in large doses. Reliable information established the dose as being a decoction from a "piece of bark two inches square." One gentleman informed me that he had known two deaths to result from the use, at a dose, of a decoction from a piece of bark as large as a man's hand, the symptoms being vomiting, purging, and weakness.

Upon encountering the bark it was tested with the simple reagents that I was able to carry, the extract being prepared by the use of Prollius's fluid. Unfortunately, these notes were lost, but I think it was tannic acid which precipitated a small quantity of a white substance, which I presume may be an alkaloid on which its virtue depends.

Only three physiological experiments were made, but they agreed so well in their strongly marked results that they may be considered as sufficient for a preliminary examination of this sort. A quantity of the bark was partially dried in the sun and roughly powdered in a mortar, and this was administered in its crude state to three individuals in doses of 20, 30, and 50 grains respectively.

A, who took 20 grains three hours after eating a light breakfast of soup and rice, was a young man of good constitution and in excellent health. In thirty minutes he experienced nausea, which increased steadily for one and one-half hours, continued unchanged for the same period, and then began to abate. In five hours the effects had entirely disappeared, and the next day he had his usual health. The following special symptoms were observed:

Stomach: he could have vomited at almost any time during the experiment, but restrained the desire, as vomiting always gave him much distress. He, however, gagged out great quantities of mucus.

Bowels: shortly after taking the dose he had the usual daily passage. Soon after his nausea was at its height, he desired to defecate again, but it proved to be a false alarm.

Mucous membrane of mouth and throat: a strong metallic taste began, continued in exact proportion, and declined with the nausea. Expectoration of mucus very profuse. As the effects began to pass off the throat became very dry. On examination it at first presented an appearance of bright redness, with the line of demarkation strongly pronounced at the region of the uvula, after which it became very pale.

Nasal passages: sneezing and nasal discharge marked.

Skin: a slight tendency to perspire.

Cerebrum: slight dizziness, supposed to be due to sympathy with stomach. No headache.

General effect: sickness not prostrating, nor nausea very severe, but a great sense of lassitude.

B, who took 30 grains, was an American of broken-down constitution, a dreadful drunkard, and affected with chronic diarrhœa. He had no syphilitic taint, but, what is very common in that country, and due primarily to the never-ceasing attacks of insects, his legs had been for years a mass of cutaneous inflammation, with many large ulcers. Being a confirmed coca-chewer, he, from force of habit, chewed the bark well before swallowing it. In thirty minutes nausea and prostration appeared, but were not severe. There was no sneezing and but little nasal discharge, but a profuse expectoration of mucus. Little effect on the salivary glands. Metallic taste in mouth, but no dryness. No perspiration and no pain of any kind. In an hour he vomited profusely and repeatedly, and was much prostrated. Vomited at first stomach contents, and then a large amount of bile and mucus Within two hours his bowels moved twice,

said to be clearly the effect of the drug. Discharge bilious and mucous. After six hours his nausea disappeared, but left slightly bad general sensations. Next day he had his usual health.

C, who took a dose of 50 grains, was a man prone to nausea and dizziness, and affected with chronic catarrh of the entire respiratory tract. His sensations and symptoms were much like those of the others, but did not come on so rapidly. Vomited, but not so much as B. Slight movement of bowels, with rectal irritation. Same nasal and throat symptoms as in A. The sneezing very severe, slight dull headache, slight stomach-ache, supposed to be due to the indigestible nature of the comparatively large quantity of bark swallowed. Perspiration slight but decided, and apparently due to the general prostration.

On collecting a quantity of the bark in sacks it was found that handling it after it was dry produced precisely the same nasal discharge and sneezing as were caused by its ingestion, in all who were present, except B, whose mucous membrane may have been rendered insensible by his habit of coca-chewing, this being the most prominent result of the habit. So it follows that the peculiar effect of the drug can probably be secured either by internal administration or by local application.

From the foregoing it will be seen that Cocillaña contains a strongly active principle somewhat related to emetine, as to its physiological action, and which is excreted through the mucous membrane, chiefly of the respiratory tract. In this process the vessels and glands of these surfaces are stimulated to an excessive action, which, after continuing for a few hours, leaves them in a state of sedation. From this knowledge of its physiological action the general therapeutical application of the drug can be deduced. There can be little doubt but that it would exert a beneficial influence, locally applied, in ordinary nasal catarrh, acute or chronic, as it might also do in cases of hay-fever. But its chief value must depend on the fact that the same action can be promptly secured by its internal administration, by which means we reach those portions of the respiratory organs which are inaccessible, except by the cumbersome method of inhalation, the effect of which is at best but superficial and transient. Its use in membranous croup is clearly indicated. Again, the thought is suggested that, being excreted in this peculiar manner, it must exert its influence on the deeper tissues, the seat of pathological changes of diphtheria; and it may prove of value in the early stages of that disease. The same remark will apply to pneumonia. Other applications will suggest themselves to the practitioner.

The close resemblance of its properties to those of ipecac will doubtless qualify it to replace to some extent that drug, which has now become so scarce and high.

The writer is obliged to rigidly restrict himself to preliminary work, forsaking his investigations at the most interesting point, and leaving others to follow out the lines of investigation suggested. That just care is taken in making such suggestions may be inferred from the fact that as the result of more than two years of labor, during which several hundred native remedies have been examined, this is the second that has been proposed as worthy the attention of physicians. The first, Pichi (THERAPEUTIC GAZETTE, 1885, p. 810), has already obtained a secure position in the treatment of inflammatory conditions of the urinary organs. It is earnestly hoped that Cocillaña will receive a thorough clinical test. Supplies for investigation may be obtained by addressing the writer at Columbia College, New York, or of Messrs. Parke, Davis & Co.

A complete report on the botany and pharmacognosy of the drug will be found in the *Druggists' Bulletin* for August.

COLUMBIA COLLEGE.

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*OINTMENT BASES.**

BY HENRY W. STELWAGON, M.D., PHILADELPHIA.

THERE is scarcely a disease of the skin in which at one time or another in the course of treatment oleaginous applications are not found necessary. Certain diseases, it is true, may be occasionally treated satisfactorily by means of lotions, but such cases are comparatively rare. It goes without saying, therefore, that an excipient for an ointment mass is of importance in cutaneous therapeutics; and this need is, in fact, recognized by enterprising chemists and experimenters, as made known by the many new bases that have been placed upon the market in the past several years. Thus may be cited such new preparations as lanolin, oleic acid, mollin, glycerite of starch, and the petroleum prod-

* Read before the Philadelphia Clinical Society.

ucts known commercially as vaseline, cosmoline, petrolina, albolene, petrolatum, etc. To complete the list of the ointment bases now in use it is merely necessary to add the names of lard, suet, and cold cream, and diachylon ointment. During the past ten or more years clinical opportunities as to special practice have made me more or less familiar with the advantages and shortcomings of the various bases; and I have here jotted down briefly, and possibly somewhat disjointedly, my observations.

It requires but little experience to teach one that the best therapeutic results are not attainable by the exclusive use of any one of the several bases. Different diseases and different stages of the same disease frequently require changes in the unguent. Thus, for instance, in some cases a soft ointment—one that may be easily and readily rubbed into the skin—is called for, as in chronic scaly eczema, while in others the ointment is to be applied merely as a protective, and therefore a somewhat stiffer mass is required, —one in which penetrative power is not so important. Temperature also, varying as it does so considerably at different periods of the year, is a factor in the selection or composition of the ointment. In winter either lard or cosmoline may, if intended for exposed parts, be satisfactorily employed as a protective,—that is, applied in the manner of a plaster. To advise such in the heated season, however, would render such a method of application impossible. Another essential consideration also in prescribing is the penetrative power of the base, as already referred to. This property is extremely desirable in some cases, and a positive disadvantage in others. In acute diseases, as a rule, protection alone is desired, and in such an ointment of great penetrative power is often not only without direct result, but is prejudicial. On the other hand, to prescribe a base with practically no power of permeating the skin in such diseases as psoriasis, chronic thickened patches of eczema, would in a great measure invalidate the therapeutic effect. Another factor also to be considered is the consistence of the medicament to be incorporated. To prescribe such liquid preparations as oil of cade, carbolic acid, and the like, to be added to lard, cosmoline, or cold cream, would, if the liquid were present even in moderate quantity, make a mass too soft for comfortable keeping and use. Even in winter, if a liquid is ordered in a moderate percentage with a soft base, the ointment is unsatisfactory. On the other hand, if a large proportion of pulverulent medicament, as, for instance, starch or oxide of zinc, is to be incorporated, a soft excipient becomes a necessity, otherwise the resulting ointment would be too stiff for use. Another point of importance in the selection of bases is their tendency to rancidity. This tendency, as is well known, is always greatest in the warm season, and at such times, therefore, must be considered in such prescriptions. In winter the tendency is slightest, and its consideration is not relatively of so much import. It is to be remembered also that rancidity is to a certain degree retarded by the addition of a few minims of balsam of Peru, benzoin, salicylic acid, and other substances, without, except in acute and markedly inflammatory diseases, compromising the therapeutic result. Occasionally, in the applications to the skin, neither protection nor penetration influences the selection of a base, but the main effect desired is a detergent or dissolving one.

With these cursory general observations the individual properties of the various bases may next be referred to:

Lard.—This base possesses penetrating and softening powers scarcely, if at all, inferior to any yet introduced; it is white, and therefore, in an ointment sense, clean; it is found to agree with most skins; in cold seasons its consistence is such that it may be used not only by inunction, but, if it is to be applied to exposed parts, also as a protective; it allows the addition of varying quantities, up to a fair proportion, of pulverulent substances, without becoming too stiff for use. Its disadvantages are that it tends rapidly to rancidity, and, as with all unguents, except cooling ointments,—those containing water,—is not acceptable to certain skins; it does not alone permit, without becoming too soft for satisfactory use, the incorporation of liquid medicaments; its low melting-point makes it unfit for summer use, unless mixed or stiffened with other substances.

Cold Cream (*Ungt. Aquæ Rosæ*).—This base, if properly made, is cooling, and therefore acceptable to almost all skins; it has, however, very little penetrative power, and tends to rancidity. In its other properties—consistence, etc.—it practically has the same advantages and disadvantages as lard.

Suet.—Unirritating and softening, admitting of the incorporation of a large proportion of liquid without becoming too soft; its disadvantages are that it is alone too stiff for use, and tends to rancidity.

Vaseline and Cosmoline.—No tendency to become rancid; acceptable to most skins. Disadvantages: very little penetrative power, melting-point about the same as lard, and hence the same disadvantages in regard to consistence, etc.; occasionally irritating; stains the linen a slight brownish tinge. These preparations may be procured, however, as white ointments, but as such they are not so innocuous as the unbleached products.

Petrolatum.—Is essentially the same as the preceding substances,—vaseline and cosmoline,—but, as recommended by the Pharmacopœia, the melting-point is higher, varying, in fact, from 105° to 125°; this is regulated by the admixture of paraffin. The advantage over the foregoing is that of greater consistence, and, by ordering the preparation at different melting-points, according to the season and to the consistence of the medicament to be added, it becomes a valuable base.

Lanolin.—It is said to possess remarkable penetrating properties, and, according to my experience, this may be measurably admitted. Its superiority in this respect to lard, however, is still open to question. It admits of the admixture of an equal percentage of water, and may then be used as a cooling ointment; it may be inferred also that such remedies as oil of cade and other liquids may be incorporated without the resulting ointment becoming too soft for use. Its disadvantages are, that it is too stiff to be used alone; the sheepy odor is not entirely absent; it tends, although slowly, to change, and it is occasionally found to be irritating.

Unguentum Diachyli.—Is soothing and unirritating, and about the consistence of lard. Its great disadvantage is its unstable character, tending rapidly to become rancid, and also becoming tough and stringy after a short time. Its preparation is somewhat difficult and tedious, and hence that found in the different shops is apt to vary considerably.

Mollin.—Is about the consistence of lard, and admits of being thoroughly rubbed into the skin, possessing a moderate amount of penetrative power. Inasmuch as it is a soapy base, its disadvantages for general ointment purposes are evident. This property, however, is occasionally desirable, as, for instance, as a base for the incorporation of such drugs as sulphur, styrax, tar, etc., in the treatment of scabies, sluggish acne cases, etc.

Sapo Viridis.—This as an ointment base is rarely employed, but in exceptional instances it is for this purpose exceedingly valuable. The advantage of this preparation is its strong detersive property, and it may be even caustic. Its use, therefore, is within narrow limits only.

In endeavoring to utilize the memoranda above noted, which really are in themselves therapeutic indications, the object of the application must be kept in view. Thus, if a penetrating ointment base is desired, so that the remedy may be brought in intimate association with the skin, as often called for in such diseases as acne, psoriasis, certain forms of eczema, alopecia, etc., then the base is to be made up of lard, suet, or lanolin, or a mixture of two or more of these; the selection depending also upon the consistence of the medicament to be incorporated. If protection and a moderate amount of penetration and softening are desired, as often in subacute conditions, then cold cream, or any of the above, mixed with petrolatum, may be prescribed. On the other hand, if simple protection is aimed at, as in zoster, pemphigoid diseases, burns, etc., then petrolatum, unguentum diachyli, alone or mixed with cold cream or lard, may be employed. If it is desired to emphasize the action of the remedy incorporated, and at the same time employ a base active in itself, as in thickened eczematous patches, in callosities, sluggish forms of acne, and the like, then recourse may be had to mollin and sapo viridis. Finally, in regard to consistence and rancidity; the former may be regulated by the proper admixture of two or more bases, or the addition of wax, spermaceti, or similar substances; the latter may be measurably obviated by the addition of a minute amount of benzoic acid, salicylic acid, or balsam of Peru.

UNTOWARD EFFECTS OF CASCARA SAGRADA.

By C. M. Fenn, A.M., M.D., San Diego, Cal.*

With the advent of the "sacred bark" it was hoped that the *ultima thule* of therapeutic research—namely, a reliable and harmless remedy for chronic constipation—had been attained. The great number of recorded successes which quickly followed its introduction seemed to give color to the belief that "a long-felt want" was about to be gratified.

Earnestly desiring to confirm, if possible,

* Member of State Medical Society.

the good opinion of the drug, the writer lost no favorable opportunity to test its usefulness. In cases of really obstinate constipation, the aromatic or proprietary preparations were, for the most part, inert. Some of the published formulas became harmful, especially if long continued. My own attempts at combination and dosage were more frequently disappointing than otherwise. I am ready to confess that in a very few instances temporary relief was obtained, akin to that from buckthorn, etc. The conclusion arrived at was and is that cascara sagrada, so far from being a harmless laxative, adapted for general and protracted use, is an irritant cathartic, requiring in its use great circumspection and care. Notes of several cases, prepared for publication more than a year ago, have been withheld, partly awaiting the verdict of those having larger experience.

CASE I.—A lad, 11 years old, was troubled with constipation long after convalescence from some hepatic malady. At the suggestion of a neighbor, he had, on several occasions, taken moderate doses of cascara, after the formula of the family physician. Each dose of the remedy produced vomiting and other unpleasant symptoms, nor was it possible to establish a tolerance of the bark in any effectual dose.

CASE II.—A middle-aged matron, of sanguine temperament and very costive habit, had been making use of various medicines, as they were suggested by laity and physicians. As none of them had proved satisfactory, I prescribed fluid extract of cascara sagrada, with belladonna, nux vomica, and glycerin. When the laxative effect was reached there was so much "heat and griping" that she took it only at intervals of five or six days, and was finally obliged to discontinue it.

The third case occurred in the person of an elderly English woman, of nervous temperament and relaxed habit of body. For her constipation aloin, physostigma, and other medicines had been employed with varying success. Cascara sagrada was now administered tentatively until it became gently laxative. Traces of blood were soon detected in the evacuations, attended with burning pains in the intestines. She went to bed weak and discouraged, insisting that I "could not bring her through this time." Her words became prophetic by reason of a sharp attack of cholera morbus, which quickly carried her off. An autopsy was not permitted.

A young miss of 13 took from 20 to 30 drops of the fluid extract daily for a week. Increase of flatulence and abdominal tenderness made it necessary to resort to other measures.

Not to protract the narrative, I close with two remarkable cases in which I was a consultant, and in which the untoward effects of cascara sagrada were clearly demonstrated. They were an elderly German couple, of feeble vitality at best, the old gentleman, aged perhaps 70, being the more infirm. Besides his weight of years he was a victim to semilunar valvular insufficiency, which I had diagnosticated and prescribed for a year before. His wife had suddenly manifested symptoms of mental aberration; she continued to look after her household affairs, but with an entire absence of method. At our interview the doctor's face was familiar to her, she said, but his name had escaped her memory. To her husband, patting her on the cheek, and asking, "Fräulein, do you know me?" she replied, "Yes, you are God." Mr. H. further informed us that she had eaten nothing for several days; had vomited and purged considerably, yet, until now, had never shown any mental disturbance. In the kitchen we found a chafing-dish, which contained possibly half a pound of cascara sagrada bark and three or four ounces of a thick liquid, the residuum apparently of a tea or decoction they had been making. He admitted that each had partaken of it for the relief of constipation, to which both were subject. Recalling certain cases of reflex insanity ("Hammond" has known it to result from worms and indigestible substances even), I gave a favorable prognosis as to the wife's mental condition, which, at a later period, was verified. Mr. H. was greatly despondent, however, and failed or refused to note her daily improvement. His appetite and strength became impaired, and he complained of constipation and abdominal pains. The doctor prescribed a tonic laxative, which the druggist failed to send to him, so that, except possibly the tea referred to, he took no medicine. On the evening of the sixth day we were summoned to his residence in great haste, but too late to be of any service to him. Having left his wife's bedside for a few moments, he was found seated in a kitchen-chair dead. The pallor of his head and face was so marked as to suggest at once the probability of cerebral anæmia.

At the necropsy, twenty-four hours after death, I saw the brain removed. Not an ounce of blood followed the dissection. A

round hole in one of the semilunar valves large enough to admit a lead-pencil had been the site of an old lesion. When the stomach was removed several large patches of ecchymosis studded its walls. I was informed also that the mucous membrane was abraded in several places. So striking were these pathological conditions that an inquest was demanded, and some of the expert testimony pointed to corrosive-poisoning as the cause of death!

In conclusion, I think the wife's malady was due to overdoses of the drug. In the other case, the ecchymotic spots in stomach and intestines, if not the cause of the death of the old gentleman, must have been produced by the cascara, as he had taken nothing else. If, as we know, trifling emotion is sometimes the cause of cerebral anæmia and death, we can readily imagine the relation between such an intense congestion of the stomach and determination of blood from the brain.

In further corroboration of the views advanced, I quote from the experimental studies of Dr. Tschelzen, which were published in the *Journal de Médecine de Paris*. He says, "Cascara sagrada is efficacious when a prompt cathartic action is looked for. It acts as a purgative only after it has been introduced into the stomach, where it greatly increases the secretion of the gastric juice, etc. When it is injected into the vessels, animals undergo partial and often fatal collapse. *The blood-pressure is rapidly decreased* (italics mine) even after partial dissection of the pneumogastric."

Quite recently Dr. R. O. Cotter, in the *Atlanta Med. and Surg. Journal*, reports two cases in which drachm doses of the fluid extract evoked symptoms resembling those of cholera morbus.

PRELIMINARY NOTE UPON A NEW METHOD OF TREATING YELLOW FEVER.

By Geo. M. Sternberg.*

In view of the recent announcement that yellow fever has reappeared in Florida, and the possibility that it may soon prevail as an epidemic in that State, the writer has decided to report the favorable results recently attained in the treatment of the disease in Havana by a method proposed by him, although the number of cases is still comparatively small.

My recent researches in Havana have led me to think it very probable that in yellow fever, as in cholera, the specific micro-organism causing the disease is located in the alimentary canal. While this is not proved, it is demonstrated that, as a rule, no micro-organism capable of development in the culture-media usually employed by bacteriologists is present in the blood or tissues of those recently dead from yellow fever. This view naturally suggests intestinal antisepsis as a mode of treatment.

It is well known that in yellow fever the urine and the vomited matters are highly acid. I have also found the intestinal contents to have usually a more or less decided acid reaction. A microbe, therefore, capable of multiplying in the stomach and intestine in this disease must be able to grow in an acid medium. But aside from this theoretical reason for prescribing alkalies, the highly acid condition of the secretions furnishes an indication for such a treatment, and the writer has long desired an opportunity to see a thorough trial of a decidedly alkaline treatment.

These considerations induced me during my recent visit to Havana to propose the following formula:

℞ Sodii bicarb., grammes x (gr. 150);
Hydrarg. chlorid. corrosiv., centigrammes ii ($\frac{3}{10}$ gr.);
Aquæ puræ, litre i (1 quart). M.
Sig.—50 grammes (about 1¾ oz.) every hour; to be given *ice cold*.

This treatment was adopted by Dr. Raphael Weiss, house physician at the Garcini Hospital, and I have just received from him a record of twelve cases treated by the director of the hospital, Dr. Francis Cabera, and himself.

The complete temperature charts sent to me by Dr. Weiss sustain the diagnosis in all of these cases, and this is confirmed by Dr. Daniel M. Burgess, United States Sanitary Inspector at Havana, who writes me:

"Havana, July 18, 1888.

"My dear Dr. Sternberg,—

"I send you by this mail Dr. Weiss's report of twelve cases treated by the alkaline and bichloride method. Although they were all Spaniards, and were not directly under my care, I had sufficient supervision of the cases to satisfy me that they were all genuine yellow fever. It will be seen that they all recov-

* Major and surgeon, United States Army.

ered, and I will add that every case so far treated at the Garcini by that method has recovered. While these twelve cases were being treated, and a little before, eight cases were treated in the same institution by other methods, and five of the eight died."

Dr. Weiss writes me that in some of the more severe cases he increased the amount of bichloride to five centigrammes ($\frac{3}{4}$ gr.) per litre. He says,—

"Administering to the sick the bichloride of mercury, according to your directions, the gastric phenomena are very much modified; the gastric sediments appear later, and in no case have they been entirely dark. In some cases, truly dangerous on account of the state of the patient, in a general sense, gastric sediments" (black vomit) "did not appear, nor even nausea. The pains in the stomach were not so severe."

In some of the cases Dr. Weiss added benzoate of sodium to the formula for its laxative effect, and administered daily two enemas containing each a gramme (15 grs.) of the phenate of sodium.

Sherry wine and hypodermic injections of ether were given during the second stage, when the pulse was feeble and the condition of the patient seemed to call for a stimulant.

With reference to the urinary secretion, Dr. Weiss writes,—

"The urine has always been abundant. In some cases the density lowered, but was compensated by a large quantity of urine. Albumen did not appear in some of the cases, in others the amount was small, and in others it reached two grammes to the litre. The albumen has always disappeared on the second or third day, and then the fever ceased."

Although Dr. Weiss has sent me the clinical records of only twelve cases, he says in his letter,—

"I have dealt with thirteen sick from the beginning of the disease, and all have recovered. . . . Before using this new treatment, during the present season, we had eight cases which we treated from the first day by the old method" (mainly symptomatic), "and five of the number perished."

This mode of treatment will, of course, require a more extended trial before the results can be fairly compared with those obtained by other methods. I may remark, however, that in similar cases treated by the "expectant" method, the mortality rarely falls below twenty per cent., and in hospital practice is often fifty per cent., or even more.

Whether the favorable results are to be ascribed to the alkali, or to the antiseptic action of the bichloride, can only be determined by testing the two remedies separately; but I am very much disposed to ascribe the unusual absence of gastric disturbance, and the abundant secretion of urine noted, to the alkaline element of the treatment, and it is extremely doubtful whether the bichloride reaches the intestine in sufficient quantity to exercise any decided antiseptic effect in that portion of the alimentary canal. The bicarbonate should be free from carbonate of sodium, as the mercuric chloride is decomposed by this salt and by alkalies generally. It is possible that the biniodide might be substituted to advantage in the formula above given.

In some experiments made by the writer several years since to determine the comparative antiseptic value of the salts and oxides of mercury, the following results were obtained:

	Active.	Failed.
"Biniodide of mercury...	1 to 20,000	1 to 40,000
Bichloride of mercury...	1 to 15,000	1 to 20,000
Protiodide of mercury...	1 to 10,000	1 to 20,000
Yellow oxide of mercury.	1 to 1,000	1 to 2,000
Black oxide of mercury.	1 to 500	1 to 1,000
Calomel	.....	1 to 100
Blue mass	.....	1 to 100

"In every case the antiseptic was carefully weighed and added to one hundred cubic centimetres of beef-peptone solution, or of veal broth. A similar quantity of the culture-fluid was put up as a *temoin* without the addition of the antiseptic. As the oxides and iodides of mercury are insoluble in water, the bottle was repeatedly shaken in order to dissolve in the albuminous culture-fluid as much of the antiseptic as possible. An undissolved remnant could, however, be recognized at the bottom of the bottle after this repeated shaking. Two drops of broken-down beef-stock were added to each bottle to cause speedy putrefaction of the culture-fluid in the absence of a sufficiently potent inhibition of the developing power of the bacteria of putrefaction. In every case in the comparative experiment the culture-fluid became clouded, and had a putrefactive odor at the end of twenty-four hours.

"The first column in our table shows the proportion in which the culture-fluid was preserved from any appearance of decomposition for at least a week, the duration of the experiment. In the proportion given in the second column a decided inhibiting power was shown, except in the case of calomel and blue mass, which, in the proportion given (1 to 100), gave no evidence of antiseptic power. The other salts and oxides in the list prevented decomposition for twenty-four hours in the proportion given in the second column; and it was not until the second day that the bacteria of putrefaction commenced to form a cloud at the upper surface of the fluid, which gradually extended until the fluid had entirely broken down, usually by the third or fourth day. The bottles containing the biniodide (1 to 20,000) and the bichloride (1 to 15,000) have now been standing in the laboratory for three weeks, and are as transparent and free from odor as the day they were put up."*

The bichloride, the biniodide, and the oxides of mercury exhibited a decided inhibitory—antiseptic—effect upon the development of the bacteria of putrefaction in the proportion given in the second column, and we may use these figures as a guide in our efforts to secure intestinal antisepsis by means of these agents; although it is of course very uncertain how much of the soluble mercuric salt introduced into the stomach reaches the intestine in an active form,—probably very little. In the formula which I gave to the physicians of the Garcini Hospital the amount of bichloride prescribed is really only in the proportion of 1 to 50,000 parts of the solution; but I considered it advisable to commence the treatment with an amount that was entirely safe, and to increase the dose afterwards if it was found to be prudent and desirable to do so. Dr. Weiss has, in fact, increased the dose in several severe cases to 5 centigrammes per litre,—1 to 20,000. As all of these cases recovered, we may infer that when largely diluted, as in this formula, and given in small quantities at short intervals, it may be safely administered in these doses; but, as already intimated, I am rather disposed to attribute the favorable course of the disease to the full alkaline treatment than to any antiseptic effect of the bichloride in the intestine. In the stomach, however, I should expect a decided antiseptic effect from the medicine as administered; and perhaps this is, after all, what is most needed.

JOHNS HOPKINS UNIVERSITY,
BALTIMORE, MD.

* From report of Committee on Disinfectants of the American Public Health Association, 1885.

THE DETECTION OF URETHAN.

The detection of urethan in the urine is brought about by Jacquemin as follows: Five hundred cubic centimetres of urine are shaken with a not too sparing quantity of ether, which is then separated and repeatedly washed with water to free it from all traces of urine, and allowed to evaporate spontaneously, when the urethan will remain in crystals, or apparently amorphous if present in very small quantity. The residue is taken up with ten to twenty cubic centimetres of water, solution of potassa added in slight excess, and then a five-per-cent. solution of corrosive sublimate, when a more or less copious precipitate, according to the quantity of urethan present, will fall, which is mercuri-carbonate. If less than .001 grain of urethan was extracted by the ether, the precipitate will not be white, but of a yellowish color, and will easily redissolve. — *Pharmaceutical Record*, June 15, 1888.

A NEW MORPHINE ETHER.

BOMBELON, in the *Pharm. Ztg.*, announces the discovery, by him, of a new morphine ether, which he describes under the name of somniferin, and the therapeutic properties of which, he claims, exceed those of morphine, as the dose is relatively smaller, and it produces no bad after-effect; besides, it has no action on the heart. Of the method of preparation the author does not write, but further information is promised when the physiological trials which are now under way will be completed. The author also states that he has succeeded in preparing morphine eserine, which contracts the pupil without causing pain; morphine-tropin, chinin-tropin, etc. He declares that by his process these bodies can be united in many ways and produce many combinations possessing the combined therapeutic properties of their constituent alkaloids, or, in a few instances, entirely new characteristics.—*Pharmaceutical Record*, June 15, 1888.

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Leading Articles.

SPECULATIVE THERAPEUTICS.

AS the readers of the THERAPEUTIC GAZETTE know, we have not much faith in any good coming out of what may be called therapeutic speculations. It is so easy to sit in an arm-chair in a well-furnished office and to evolve matter from internal consciousness, text-books, and journals, that the temptation is great to indulge in the pastime and hug the delusion that it is useful work. The only variety of work, however, which to our thinking has ever achieved results of importance in therapeutics is plodding, persistent, well-directed experimental research, including in the term experimental research studies with drugs made both upon man and upon animals. The amount of facts which have thus been added to our knowledge during the last two decades is enormous, but we do not believe that the time either has come, or is close at hand, at which it is, or will be, possible to array these facts and draw from them any great therapeutic laws. For these reasons we have not often in these columns noticed any articles of a speculative character; but a recent memoir in the London *Practitioner* has attracted so much attention and is so plausible, that it seems necessary to point out the fallacies which underlie its structure. The theorem which is upheld in this paper may, we think, be fairly represented in the following paragraph:

All drugs have a primary and a secondary action, which primary and secondary actions are in many, if not all, cases either stimulant or sedative. All remedies whose first action is stimulant have secondary actions which are sedative. All remedies which are generally considered to be sedatives are not sedatives, but remedies which are primarily stimulant in minute dose, their sedative action being a secondary one.

The first fallacy which is involved in this reasoning is in the statement that drugs have primary and secondary actions. The terms, it will be noticed, are used by the author not in their common sense, or, at least, not in the sense in which they have been employed in the older treatises, and in which we are accustomed to them. The primary effect of a remedy, according to the use of the word which we have been habituated to, is the one which immediately follows from the action of the drug itself; the secondary effect, some action which is the result of the original primary effect. Thus, in dropsy the primary effect of a dose of Epsom salts is to purge; the secondary effect is to bring about absorption through the emptying of the blood-vessels. Dr. Boardman Reed, the author of the memoir under discussion, does not define at all the words primary and secondary. He apparently thinks, however, that a stimulant remedy, like ammonia, exerts an influence as a stimulant, which he calls primary, and then, as the result of this, a secondary influence, which is sedative, causing paralysis of function.

If this is not what Dr. Boardman Reed means to affirm, we are unable to comprehend his words. We certainly think that the terms primary and secondary indicate that the actions flow one from the other. Now, all that the present state of our knowledge allows us to assert is that certain substances in small doses stimulate—*i.e.*, increase functional activity—and in large doses depress,—*i.e.*, lessen functional activity. How or why they increase functional activity, and how or why they lessen functional activity, we do not know, and it is a pure assumption that one effect is primary and the other secondary. A small dose of ammonia stimulates

the heart,—*i.e.*, increases its movements; a violent dose arrests the movements of the heart without any "primary" stimulation that can be perceived. A slight blow on the head causes a man to strike the giver of the blow; a violent blow on the head causes the man to drop unconscious; and it seems to us as rational to say the primary effect of a blow upon the head is to irritate, while the secondary effect is to produce unconsciousness, as to make the assertions involved in the theorem of Dr. Reed. The matter is not one merely of terms, but of clear thinking. So long as primary and secondary are used, so long is there danger of thinking that there is interdependence between the two effects; and no such interdependence is as yet proven.

The second proposition, that all stimulants are secondarily depressants, Dr. Reed attempts to prove by describing some stimulants which act, using his terms "primarily" as stimulants and "secondarily" as depressants. Having then reached the conclusion that all stimulants are depressants in overdoses, he takes from this another step, and concludes that, therefore, all sedatives must be in small doses stimulants. Suppose, to show the fallaciousness of the reasoning, we put his propositions in the form of syllogisms. *First.*—It is proven and acknowledged that *some* substances first stimulate and then in larger doses depress. Therefore *all* substances which stimulate are, in overdoses, depressant. *Second.*—All substances which are in small doses stimulants are in overdoses depressants. Therefore all substances which are depressants are, in minute doses, stimulants, and consequently there are no such things as sedatives. Can there be a greater *non-sequitur?*

When we come to examine Dr. Boardman Reed's studies of individual drugs, we find that the statements are certainly far beyond what is our present knowledge of facts. Thus, although ammonia stimulates and then paralyzes cardiac muscle, we have at present no knowledge that digitalis, which, in small doses, stimulates cardiac muscle, in overdoses paralyzes it. The heart is arrested in permanent spasm of its muscle by substances of the digitalis group. If Dr. Reed's proposition were true, more digitalis ought to set the arrested heart in motion by relaxing the spasm.

As a further instance of the fallacious reasons of this paper we cite the following paragraph:

"Again (p. 478), Phillips cites the observations of Voisin and Liouville, which showed that curare 'generally raised the temperature three or four degrees' (primary effect), but adds: 'According to Vulpian's observations on animals, the rise is temporary and superficial, and the internal temperature is soon markedly lowered, probably, as he suggests, from rapid loss of caloric by the surface.' But why should there be a 'rapid loss of caloric by the surface' if the muscular system were primarily paralyzed? It is in accordance with analogy that increased muscular activity raises the temperature, while paresis or paralysis of the muscles leads to a lowering of the temperature. There can be no doubt, therefore, that moderate doses of curare—probably also even large ones at first—produce a stimulation of the muscles."

Apparently, Dr. Reed ignores the fundamental facts of bodily heating. He asks the question why there should be a rapid loss of caloric. He himself should have answered it by stating that the rapid loss is probably the result of a vaso-motor paralysis, since vaso-motor paralysis is always accompanied with an excessive loss of heat, and curare produces, in large doses, vaso-motor paralysis. Again, curare acts upon the nerves rather than upon the muscles. Further, there is no proof that the action of curare upon the temperature has any direct or indirect connection with its influence upon the muscles.

We do not propose to occupy any more space with discussing the various alleged facts brought forward by Dr. Reed in support of his thesis. We would not, indeed, have occupied this much space if the matter had not been put forth as the basis of what may be considered a therapeutic doctrine, to which the name of "physiological antagonism" has been given. If it be stated that there are certain medicines which in large doses act in a manner *apparently* antagonistic to the effects of their smaller doses, all must agree. But if the attempt be made to expand this statement into the affirmation that there is a law dominating the physiological action of remedies, so that all remedies have a double action, we are in danger of putting ourselves exactly in the position of devotees of the various *isms* in medicine. The man who, in the present state of our knowledge, pins his faith to any such crude, imprudent generalization is probably not one whit nearer the truth, or more correct in his action, than he who, a quarter of a century ago, based his life-work upon the alleged law of *similia similibus curantur.* One is as well founded as the other.

What is wanted in therapeutics is conscien-

tious experimental study by minds that are free from theories,—study based upon the recognition that at present no theories of therapeutic action are possible.

It is not impossible that the words stimulant and depressant may, in the future, be abandoned in therapeutic medicine. How does a drug stimulate? What does it do when it stimulates? What, after all, do we mean by the word "stimulation"? These are questions which a fool might ask, and a man wise in medicine might well hesitate to answer. Medicines interfere probably with the chemical movements of the body, and when they interfere in such a way as to apparently increase functional activity, we call them stimulants; but when their interference apparently diminishes activity, we call them sedatives. The time may come when we shall understand that drugs simply modify the chemical activity of the tissues, and that the various interferences which now seem to us to possess the common quality of either stimulating or depressing are *inter se* very different.

As an example of the unwisdom of attempting to practise medicine upon the basis of therapeutic speculations like that which we have been considering, we may cite the case given by Dr. Reed himself in support of his views,—a case in which a child suffering from symptoms of intestinal catarrh recovered after being put upon minute doses of podophyllin. Supposing that the medicine had anything to do with the result, the effect would not be an exemplification of the principle advocated by Dr. Reed, but, to our thinking, was produced in an entirely different way. After inflammatory conditions there is relaxation, so that in the latest stages of any catarrh locally stimulant medicines may be required. Certainly podophyllin in overdoses producing violent purgation would not be looked upon as an intestinal sedative, but as an irritant, and if in the case spoken of it did good, it must have been in virtue of its acting in small doses precisely as it acts in large doses,—namely, as a stimulant. To account for the result in the way Dr. Reed alleges it was produced would be to suppose that podophyllin is in large doses stimulant; in small doses sedative.

In conclusion, we desire distinctly to be understood that we do not uphold any therapeutic law or views in this editorial, but wish simply to indicate the uselessness and absurdity of all such speculations in the present state of our knowledge.

IMPURE AIR AND PUERPERAL FEVER.

THE Obstetrical Society of Edinburgh has fairly won, and as ably maintained, a high reputation for scientific work. Its transactions are widely read, and are generally regarded as in a measure authoritative. When a paper is published under the auspices of this organization, we naturally await a sound exposition of the subject, fairly representative of advanced opinion. Accordingly, we turn with uncommon interest to the president's essay on "Some Cases of Puerperal Septicæmia due to Impure Atmosphere."* Dr. Underhill reports four cases of alleged puerperal septicæmia, with two fatal terminations, that he asserts were due to impure atmosphere. Before attempting a brief analysis of these cases, it may be remarked that the details, as regards the symptoms and course of the disease, as well as the antiseptic precautions, are very meagre to warrant the startling assertion comprehended in the title. Then, too, no autopsies were held.

The first case was that of a young, healthy primipara, that was delivered in the same house in which a relative died of gastric cancer a few hours before. "*The membranes were retained, and had to be removed by the hand inserted within the uterus.*" This organ, however, "was thoroughly washed out after the labor was over with a strong solution of permanganate of potassium." At the expiration of the first twenty-four hours a chill occurred, and the temperature rose to 102°, the disease terminating in death on the fifth day.

This case, we are informed, is an example of puerperal septicæmia due to the vitiating influence of cancer of the stomach upon the atmosphere! The possibility of contact infection is not mentioned, to say nothing of its absolute exclusion.

The second case was one of neglected abortion, occurring in the person of a young multipara, that had been in attendance upon a relative that was suffering from a suppurating cyst. On the morning of the fourth day after the hemorrhage began "she was awakened by a very severe pain in the abdomen, and had a somewhat fœtid discharge." Up to this time she had not been examined. She died of sepsis on the seventh day, notwithstanding lavage and disinfection of the cavum uteri.

Admitting that the woman was infected before examination, it does not follow that

* *Edinburgh Medical Journal*, May, 1888.

the air was necessarily the carrier of infection. It is quite possible that the woman infected her own genital tract with the fingers that had come into contact with the purulent discharges from the cyst.

Moreover, we know that cocci* resident within the vagina and cervical canal, or adherent to the skin surface, may gain access to puerperal wounds, cause the decomposition of wound secretion, and condition a resorption fever. Winckel's† cases of street labor, and Ahlfeld's‡ experiments with women allowed to pass through labor in complete isolation and without vaginal examination, render it highly probable that infection may occur without the mediation of attendants and in a relatively pure atmosphere. Blood-poisoning in neglected abortion is not uncommon even under the most favorable conditions of atmospheric environment.

Both of these modes of infection—contact and so-called spontaneous or self-infection—must be excluded before the agency of the air can be invoked.

Mrs. C., Case III., was "perfectly well as long as she remained in her bedroom, which was until the sixteenth day. She was then wheeled on a couch into the adjoining room, which was used as a sitting-room. Immediately behind the sitting-room, and separated from it by a narrow passage, was a water-closet. The soil-pipe from this closet was not carried directly out into the open air, but went down through the house in close proximity to the sitting-room." About the eighteenth day "pains about the shoulders" were complained of, and a temperature of 100° was noted. On the twenty-fifth day her temperature "rose to 104° and remained high." "She had no symptom of any local inflammation anywhere;" still the uterus was washed out without any apparent effect upon the fever. "On the twenty-sixth day the drains were examined by an expert, and a leak was discovered in the pipe under the closet, behind the sitting-room." After removal to another room the patient gradually recovered.

In connection with this case, we beg to call attention to the fact that it is not customary in Edinburgh to wheel on a couch a puerpera in normal condition that has reached the sixteenth day. After the first sixteen days of a normal puerperium, it is customary for the lying-in woman to walk, and the fact that she was compelled to be wheeled on a couch into the other room is a suspicious circumstance that, in the absence of any other reason, may be construed as indicating some puerperal mischief, possibly infection.

But Dr. Underhill remarks on another page that this "was a quite undoubted case of drain-poisoning." Now, we have always been under the impression that sewer-gas poisoning and puerperal septicæmia were two perfectly distinct morbid states. By this, the author's voluntary admission, the case can be legitimately excluded from consideration.

The fourth case was that of a primipara,—a long labor, premature rupture of the membranes, torn perineum, that was successfully united. On the third day the temperature rose, and the lochia became offensive. For ten or twelve days the temperature ranged from 99° to 103°. A small leak in the region of the water-closet near her bedroom, and a larger one in the soil-pipe in the area underneath her window, were found, and the inevitable conclusion expressed in the title of the paper was at once reached. It is needless to point out that in this case also the usual modes of infection were not eliminated.

It is also of importance to note that in his concluding remarks the president expressed the conviction that it is "rare for the medical attendants to carry the infection," and that he had "under his care a case of erysipelas, wandering for six weeks from one part of the body to another, in which the temperature went up and down, and which pulled through when the patient was removed to another room." He does not state that he was in attendance upon this case while caring for lying-in women, but merely intimates that erysipelas, like puerperal fever, is sometimes an example of drain-poisoning.

Dr. Underhill's views were indorsed with apparent cordiality by the members that took part in the discussion.

Further comment on this paper or on the discussion is needless. Both furnish typical examples of the happy-go-lucky views on the causation of puerperal fever that Fritsch has ungraciously termed antediluvian.

It is not our desire to minify the value of pure air in the lying-in chamber. But, as remarked by Keicher,§ all absolutely pure atmos-

* H. Fritsch, "Zur Klärung der Puerperalfieberfrage," *Deutsche Medicinische Wochenschrift*, No. 11, 1888.

† *Centralb. f. Gyn.*, 1887.

‡ *Berichte und Arbeiten*, Bd. ii. u. iii.

§ "On the Relation of the Atmosphere to Puerperal Fever," *Transactions Ninth International Medical Congress*, Vol. II. p. 390.

phere is not attainable. Miguel, at the Observatoire de Montsouris, found the air free from germs only at the altitude of six thousand to twelve thousand feet, while in Paris he estimates their number at two thousand to the cubic foot of air. In our large cities it is fair to presume that the atmosphere is not more pure. From the prevalence of diphtheria and allied disorders in certain populous districts, it would seem that the air was in a still higher degree impregnated with germ-life. The exact relation of the air to wound-infection has always been a problem of extreme interest to surgeons and obstetricians. While the question cannot be regarded as definitely settled, yet the weight of probable evidence is very much against the view that the air, *per se*, is ever an important etiological factor.

Kümmel* and others have shown that the majority of successful surgeons have discarded the spray, and have attained very nearly absolute results by the rigid enforcement of one condition,—cleanliness of everything that comes into contact with the wound.

It is difficult to comprehend the reason why obstetricians, who fully admit the identity of puerperal fever with wound-infection, as observed in surgical cases, still refuse to accept the results of recent investigation, and decline to use the intensely practical means of prevention. There remains a limited class of observers that insist puerperal fever is sometimes due to contagion through the lungs or intestines,—Depaul, Tarnier, Hervieux, Charpentier. At the same time, these observers are not prepared to allow such a modality in cases of so-called surgical sepsis!

The Semmeleveiss doctrine of puerperal fever has been demonstrated in its general outlines, and no longer admits of discussion. Still, this knowledge has not passed into the *succum et sanguinem* of every physician to a degree that precludes the necessity of endless reiteration. A brilliant example of the successful application of the principles of antiseptic midwifery is afforded in the Dresden *Frauenklinik*, the records of which have been recently published.† Out of three thousand one hundred and ninety-six labors that occurred in two and a third years (May 1, 1884, to September 1, 1886) only four women, or .12 per cent. of the cases, died of infection.

During the year 1887 thirteen hundred and eighty-eight women were delivered, with but a single death from infection,—a total mortality of .07 per cent. Out of this number, one hundred and eighty-nine, or 13.6 per cent., were cases that required operative interference.

There is one point of great interest at the present time in Leopold's statistics that deserves particular mention. During the years 1886 and 1887, two hundred and forty-eight women were allowed to pass through labor and the puerperium without vaginal examination, or the introduction of a tube or the like within the vagina, in order to determine the question of so-called infection. It will be remembered that Winckel and Ahlfeld have called attention at a recent period to this subject. The conditions of these cases in the Dresden *Frauenklinik* were nearly identical with Ahlfeld's. Out of the total number, two hundred and forty-three, or ninety-eight per cent., passed through normal puerperia, while slight fever, without parametritis, was developed in only five cases, or two per cent. These observations are of obviously great moment in showing the relative insignificance of all modes of infection compared with that of contact.

TREATMENT OF DYSENTERY.

A SEASONABLE matter to which we desire to call the attention of our readers is the treatment of dysentery. The modern tendency is to strain evidence to prove the contagiousness of individual diseases and to magnify the importance of the rôle played by bacterial organisms. Dysentery has not escaped this medical fad, and there is a marked inclination to consider it as a specific constitutional affection. The intestinal diseases of camps, prisons, and other places where people are crowded together in swarms, are probably constitutional, due to the presence in the blood of a definite poison, but to our thinking ordinary sporadic dysentery, the result of excessive heat, conjoined with imprudence of diet, and often exposure to cold at night or other times, is as much a local disease as is pleuritis or sunburn. It ought, therefore, to be readily affected by local measures. In fact, if we examine the most effective methods of treatment, we find that they all have a direct immediate influence upon the affected parts. The saline depletes directly from the engorged portal circulation

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* *Arch. f. Klin. Chirurg.*, 33 B., 3 H.

† Leopold, "Weiterer Beitrag zur Verhütung des Kindbettfiebers," *Deutsche Medicinische Wochenschrift*, No. 20, 1888.

and stimulates the glandular apparatus of the colonic mucous membrane into activity; the mercurial labors with the hepatic viscus and also with the diseased mucous membrane; while the black, tarry discharges, which are the harbingers of ipecacuanhic convalescence, demonstrate the action of the Brazilian root upon the alimentary glandular apparatus.

The point we want to call the attention of our readers to is the *a priori* probability that direct medication of the colon will afford the most successful, as well as the simplest (because involving least the general system), means of curing acute colitis. In chronic colitis we long ago practised the method with extraordinary success. Injections of a half gallon of medicated water into the colon once or twice a day have been attended with phenomenal results. On the whole, the use of a drachm of nitrate of silver has been the most satisfactory; but in some individual cases the persulphate of iron, nitric acid, and various other medicaments have produced the best results. It must be remembered that it is a local, not a constitutional, effect that is desired, and that the solution must be strong enough to be effectual. The enema is always returned inside of five minutes, and we have never known of any evidence of absorption of the drug.

It so happens that we rarely see cases of acute dysentery, and we therefore appeal to our readers to try upon an extended scale local treatment of the acute affection, and to report in our columns. We know that large injections of ice-water often allay most markedly the tormina and tenesmus, but have had no experience with the direct applications of medicaments in acute colitis.

The materials used should conform with the results of experience with other mucous surfaces. Subnitrate of bismuth presses to the front as a claimant for trial, 1 or 2 drachms at a dose. Nitrate of silver may act here as in angina. Hydrastin, and even acetate of lead, are to be thought of, and especially would we suggest trial of nitric acid, in the later stages. The field of colonic therapeutics seems to us open and inviting. Will not some of our readers enter therein, and give to us the fruit of their labors?

The method of giving the enemata is important. The best plan is to bring the patient into such a position that the buttocks, resting upon a bed-pillow at the edge of the bed, are so elevated that the natural tendency of fluid entering the rectum will be to run into the colon. The best form of syringe is the fountain syringe; if any of the forcing or pumping varieties are used, great gentleness must be practised. An intestine which may angrily resist a rapid injection may often be readily persuaded to tolerate a large amount of fluid. The pipe which is introduced into the rectum should be large and flexible, and the effort should be to get it well up to the sigmoid flexure. In many cases of acute dysentery the lower part of the colon is probably alone affected, so that it is not always necessary to wash the upper portions of the gut; further, not rarely the injections should be practised every two or three hours, and it does not seem necessary for the doctor himself to administer them. Any intelligent nurse can be readily taught to give them, but the practitioner should thoroughly assure himself that the drugs are really applied to the mucous membrane of the colon.

SULPHONAL.

CONSIDERABLE testimony as to the action of sulphonal has been collected since the appearance of our last issue. Salgo (*Wien. Med. Woch.*, No. 22, 1888) expresses himself with less enthusiasm as to the action of sulphonal than Rabbas and Kast. According to his observations, which were made in the insane asylum, Buda-Pesth, sulphonal given in cases of paralysis agitans is less efficacious as an hypnotic than chloral, and is not better than paraldehyde. In some cases an hypnotic effect is entirely wanting; in others the administration of sulphonal has been followed at a few hours' interval by sleep of one or two hours' duration, although in many cases it is claimed to have promptly produced the desired effect. He claims that the administration of sulphonal is never followed by disagreeable consequences, and that the drug is taken without difficulty by the patients. Salgo prefers hyoscine to all others where a hypnotic is desired in nervous cases (*Centralblatt für die gesammte Therapie*, June, 1888), using a solution of 2 parts to 1000, of which ½ a hypodermic syringeful is employed.

Langgaard and Rabbo (*Gazette Médical de Paris*, June 9, 1888) have experimented on themselves and on various patients, their results appearing to confirm in most respects those of Kast, administering it with perfect impunity in doses of from 15 to 30 grains.

Rosin (*Berlin. Klin. Woch.*, No. 18) likewise concludes that sulphonal in doses of 30 grains is not less safe than morphine and chloral,

and that even double the dose may be used with impunity, and with even satisfactory results, in cases of uncomplicated insomnia.

Oestreicher (*Berlin. Klin. Woch.*, No. 18) likewise confirms Kast and Rabbas that sulphonal is a perfectly safe hypnotic, without any influence on the respiration, pulse, or renal secretion. As to whether by prolonged use any disturbances may be produced is not yet clear, but, on account of its freedom from taste and odor, he prefers it to either amylene hydrate or paraldehyde. He admits that it is not absolutely safe, although falling far below chloral in dangerousness in heart-affections.

Cramm (*Münch. Med. Woch.*, No. 24, 1888) has employed sulphonal on four hundred and seven different occasions,—in ninety-two cases of mental trouble with a positive success,—in 92.6 per cent. producing sleep of five or more hours' duration.

The value of these experiments, as is the case in so many instances in experiments on wholly nervous individuals, is lost by the fact that it is difficult to determine what result is due directly to the action of the drug and what is due to the mental suggestion to the patient. Thus, in three cases Cramm found that he produced quite as active results by the administration of common salt.

Rosenbach (*Wiener Med. Blätter*, No. 25, 1888) recommends the addition of from 1/6 to 1/4 of a grain of morphine to sulphonal as increasing its efficaciousness.

It is thus seen that the later testimony is more favorable to the value of sulphonal than that which first followed the publication of Kast and Rabbas's results.

CASCARA SAGRADA.

ON another page of this journal we print a communication upon cascara sagrada, not because its conclusions seem well established, but because it affords us opportunity to say certain things about this much-belauded laxative, which are in the present condition worth the lines which they are occupied by. In Europe the bark of another species of rhamnus has been largely used from time immemorial under the name of frangula, or buckthorn bark, and it is recognized in the British Pharmacopœia, where it is directed that the bark should be at least one year old before using. This direction is owing to the fact that a peculiar change takes place slowly in fresh frangula bark, by virtue of which its physiological action, and probably its chemical constituents, are altered. In its fresh condition it is much more actively irritant than it is when fully ripened by age. What is true of *Rhamnus frangula*, or buckthorn, is also true of the bark of *Rhamnus purshianus*, or cascara sagrada, which should always be kept at least one year before being used. This fact does not seem to be generally known; at least, the new British Pharmacopœia fails to direct the keeping of cascara sagrada bark, which is recognized by it. If, as seems impossible, the death of the old man detailed by Dr. Fenn was really due to the bark which had been employed and not to disease of the heart, it is most probable that the decoction had been made out of a fresh, and therefore irritant, bark.

This view is confirmed by certain cases published by Dr. G. E. J. Green (*Practitioner*, June, 1888), in which he administered first a preparation made from the cascara sagrada, with the result of producing much intestinal irritation, while subsequently, upon administering the preparation made by Parke, Davis & Co. from drug long kept, the most satisfactory results were obtained. On the other hand, we do not believe that cascara sagrada, even when properly prepared, is altogether incapable of acting as an irritant. Very large doses of it undoubtedly will irritate the alimentary canal, and will cause pronounced diarrhœa, with much griping. We have used cascara sagrada as a laxative in an enormous number of cases, and have found that it is no exception to the general rule of laxatives,—namely, that it suits some individuals and not others. It has in our hands, however, seemed to suit the larger proportion of individuals than almost any other laxative, or laxative combination, unless it be the combination of aloin, strychnine, and belladonna, or the saline waters.

In a few cases cascara sagrada has seemed in some rare mysterious manner to permanently affect the alimentary canal and really cure chronic constipation. This result, however, is unfortunately rare. It is a valuable laxative, which may very well be substituted for, or used alternately with, other laxative combinations in the treatment of chronic constipation. It is a valuable addition to our remedies of the class, but it is not destined to substitute all other similar drugs.

VERNONIA NIGRITIANA, A NEW HEART-POISON.

THERE exists widely distributed on the Western coast of Africa a plant known as *batiatior*, highly esteemed by the natives as a febrifuge. Samples of this plant were recently obtained by MM. Heckel and Schlagdenhauffen, who have identified it as the *Vernonia nigritiana*. The root is composed of numerous fibres, twenty to thirty centimetres long, slender, and grayish yellow externally, a number of which are united, but form an irregular, knotty rhizome, unequally spherical at the neck or crown, and covered at this point with silky hairs. From the analogy of the rutaceæ with the compositæ, various authors, among them Martin, Corne, and Dorvault, have attributed emetic properties to this root, and have endeavored to isolate emetin from it, but as yet without success. So also all attempts at the isolation of an alkaloid from this root have likewise failed. The authors, however, have succeeded in isolating a glucoside, which has been obtained in the form of a hygroscopic, whitish powder, yielding a pale-yellow solution. This substance is only slightly soluble in ether and chloroform, the residue on evaporation being colorless and of a resinous appearance, and turned brown by concentrated sulphuric acid, the color passing to a violet purple, which remains for some hours. The formula which the authors give for the glucoside which they obtained from vernonia is $C_{10}H_{24}O$. By the absorption of two molecules of water this substance is split up into glucose and a resinous body. The authors have made a considerable number of experiments as to the physiological action of vernonin, and they detailed their results at the recent meeting of the Académie des Sciences (*Répertoire de Pharmacie*), June, 1888. Whenever 1/6 to 1/4 of a grain of the alcoholic extract in watery solution is injected under the skin, paralysis of the limb is immediately produced. If the dose is somewhat larger the heart is simultaneously arrested, as would follow injection of digitalis, convallaria, strophanthus, and other vegetable heart-poisons. An injection of 1/3 of a grain in a frog caused slight disturbance of the cardiac rhythm. In doses of 3/4 of a grain there is a slight diminution in the amplitude of the movements of the heart and reduction in the rate of pulsation. From experiments made on pigeons, it was found that a dose of about 2 grains caused death within fifteen hours, the heart being found in systole. It would therefore appear that vernonia is the first of the family of compositæ which contains an active principle comparable to digitalin, although its toxity is much less marked.

LOCO PLANTS.

OUR readers will remember, no doubt, the general qualities of the so-called "Loco" plant of the southwestern part of the United States,—the wide-spread belief that it is the cause of a fatal sickness between horses and cattle, that, ordinarily identified, it is the *Astragalus mollissimus*, and finally that Dr. H. C. Wood in a careful series of experiments was unable to find that the extract of this plant was poisonous to dogs and rabbits. In the number of the *Pharmaceutical Record* of July 2, Mr. Kennedy asserts that the Mexicans believe that this drug has an influence upon human beings. "It is said that when a señora no longer loves her liege lord señor, and fain would rid herself of him, she procures some 'herba loco,' prepares a decoction of it, and beguiles his innocence in imbibing it, after which he becomes permanently insane or dies in a short time."

Mr. Kennedy made a careful study of the plant, but was unable to find any active principle unless it were certain resins and an organic acid. Mr. Kennedy made a series of experiments upon dogs and rabbits with the drug, in substance and in its various preparations, including the organic acid, but failed to produce any toxic symptoms; his results are, therefore, concordant with those of Dr. Wood. They are specially interesting, and they were apparently made with the plant just before flowering. Dr. Wood's experiments, it will be remembered, were made with the plant in the winter state.

Reports on Therapeutic Progress.

THE FUNCTIONS OF THE SINUSES OF VALSALVA AND AURICULAR APPENDICES.

In the *Lancet* for June 9 and June 16, 1888, MR. MAYO COLLIER publishes a long paper on the mechanism of the heart and pulse, with special reference to the function of the sinuses of Valsalva, of which the following is a summary:

1. The sinuses of Valsalva are constant features of all mammalian and avian hearts.

They are not pathological formations, but, on the contrary, are absolutely essential to the efficient action of the semilunar valves. 2. The musculi papillares serve the same purpose for the auriculo-ventricular valves as do the sinuses of Valsalva for the aortic. 3. The auricular appendices probably complete the distension of the ventricles without appreciably altering the general tension in the auricles. 4. The first sound of the heart is not due to the sudden tension of the tricuspid and mitral valves. 5. The semilunar valves open and shut gradually; the second sound of the heart being due to the sudden difference of pressure on the two sides of the valves at the moment of commencing diastole of the ventricles, causing them to vibrate. 6. At each systole the contents of the ventricle distend only a segment of the length of the aorta, the force of the ventricle exerting little influence directly on the general circulation, but indirectly by the recoil of the elastic aorta. 7. That the pulse is due to a wave of dilatation and recoil, which wave is normally single. 8. That when the arterial tension is below a certain standard one or more secondary pulse-waves can frequently be felt, due to a redistension of the penultimate section and its consequent repeated recoil.

A METHOD OF WIRING FRACTURES OF THE PATELLA.

The best method of treatment of fracture of the patella may be said to be still undetermined, many surgeons clinging to the old methods, claiming for them good results, and maintaining that the operation of opening the joint and wiring the fragments is too dangerous to life and limb to become a recognized method of procedure; others, with full faith in antiseptics, do not hesitate to open the joint and approximate the fragments, claiming to obtain by this operation bony union, with full restoration of function.

While the ideal treatment is that by which bony union with unimpaired function is secured, and while it is a well-known fact that by the old methods bony union is the exception, and functional impairment of the limb a frequent result of too long a ligamentous band between the fragments, still it is a question whether the non-operative treatment, with inferior results, but absolutely free from danger, is not to be preferred to so serious an operation as wiring by the open method has proved to be.

One of the two features which impair the function of the limb after fracture of the patella may, as has been shown by Tillanus, be removed by massage and exercise of the muscle. If now a safe and certain method of operation can be devised, so that bone union shall be the rule and not the exception, the ideal treatment of the hitherto unsatisfactory fracture will be realized. With this end in view, DR. W. L. AXFORD has devised a method which seems sufficiently promising and so simple of application as to merit a trial by the profession (*Annals of Surgery*, July, 1888). Failure of bony union in fracture of the patella may be attributed to the peculiar blood-supply to the bone, effusion into the joint, muscular action, and to the engagement of the prepatellar aponeurosis between the ragged edges of the fragments. Only the latter three elements of failure require to be eliminated, for if the effusion be removed, the aponeurosis cleared away from the fractured edges, muscular contraction overcome, the bony edges held in apposition, and massage of the muscle practised, bony union should result provided the joint be not infected.

Dr. Axford's method of treating fractures of the patella is as follows: Immediately on the occurrence of fracture, the limb should be placed in a posterior splint, and soft sheep's wool applied to the sides and over the front of the knee, and held snugly in place by the roller bandages. If ice-water be kept slowly trickling on the bandage, so as to saturate the sponges and keep them well distended, the most potent factors in the prevention of inflammation and limitation of effusion, rest, elastic pressure, and cold will be utilized. At the end of forty-eight hours the knee would in all probability be ready for operation. Strict antisepsis should be observed. If the effusion into the joint be so great as to prevent easy approximation of the fragments, it can be removed by Schede's method. Should the fragments still refuse to come together, Bergmann's plan of freeing the bony attachment of the ligamentum patellæ may be resorted to. If, on rubbing the fractured surfaces together, the pressure of the prepatellar aponeurosis seem to present an obstacle to union, it can probably be freed by manipulation of one surface on the other; if not readily removed, there can be no objection to passing a tenotome into the joint for the purpose of clearing the fractured surfaces. For the purpose of wiring the fragments, a modified Brainard's drill is used.

As small a size as is compatible with the requisite strength is made one inch longer than usual, and at the point is provided with an eye large enough to admit a medium-sized silver or iron wire. Two such drills are necessary. An assistant holds the fragments firmly in apposition, the drill is entered from above, traverses the bone in the long axis of the limb, emerges from the skin below the patella, is disengaged from the handle and left in position, serving to support the fragments temporarily. The other drill is now passed parallel to the first, from below upward, the wire hooked into the eye, the drill withdrawn, and the ends of the wire twisted over the bone. Drill number one is now armed with wire and withdrawn. A few layers of gauze are placed over the patella, and the ends of the wire pushed through. Over all is placed a cap of hard rubber, leather, or felt, perforated for the wires, the ends of which are now passed through, drawn tight, and twisted. The Bavarian or open plastic splint may now be applied, and, if any reaction be feared, the sponges may be reapplied, treating the fracture as at first till all danger be passed. Attention should be paid to the quadriceps during recovery.

By this method it is held that the minimum danger of infection is incurred, and a reasonable chance for bony union is secured. Indeed, the joint is not necessarily entered, except for the purpose of getting rid of the effusion, or, perhaps, when the aponeurosis is freed. If the fragments are kept closely approximated during the drilling, the drill will not enter the joint at all.

THE TREATMENT OF BRONCHOCELE BY LIGATION OF THE THYROID ARTERIES.

In the *Wiener klinische Wochenschrift* for April 5, 1888, PROFESSOR BILLROTH publishes an article on the "Ligatures of the Thyroid Arteries with the view of producing atrophy in Bronchocele," in which he critically examines the feasibility and advantages of this operation, and illustrates it by the report of five cases. The success of this operation at his hands has been so remarkable that we publish almost entire the analysis of Billroth's paper, published by Dr. Junker in the *London Medical Recorder* for June 20, 1888.

Professor Billroth assigns the merit of having resuscitated from oblivion and having successfully revived this operation to Dr. A. Wölfler, late assistant surgeon at his clinic.

The extirpation of bronchocele, notwithstanding its very favorable results, has not fully realized the demands of modern surgeons for three reasons: (1) it is beyond our power and skill to prevent tetanus, which frequently comes on after this operation; (2) it may happen even to the most careful operator to divide the recurrent nerve or to enclose it in the ligature; (3) in children, after complete extirpation of the thyroid gland, cachexia strumipriva not unfrequently follows.

Professor Billroth never met with cachexia in his cases, nor with very large bronchoceles in children. The youngest patient on whom he performed complete extirpation of the thyroid gland was 16 years of age. Of the operations which have been recommended to supersede the total extirpation (viz., the old method of intercapsular *évidement* of the single cystic tumors, the enucleation, the subcutaneous crushing, setons with incandescent wire, partial resections, etc.), the ligature of the arteries deserves the greatest consideration. As regards the eventual success of treatment by ligatures, gangrene will probably not occur, but a gradual shrinking of the gland will take place. There will always remain, after the ligatures of the four arteries, a number of smaller vessels which will carry some blood to the bronchocele, partly from below and partly from the larynx, analogous to what takes place after the obliteration of the renal artery, when the small arteries which enter from the capsule into the kidney prevent sudden gangrene of this organ, but will not preclude its atrophy, Although this analogy seemed convincing, Dr. Wölfler nevertheless submitted it to the test of experiments on animals and man.

Atrophy, however, can only take place in adequately nourished living tissue. Whoever has had the opportunity of anatomically examining some hundreds of bronchoceles will know how very frequently large extravasations, chalky degeneration, cystic, gray, pulpy, jelly-like softening, fibrous shrivelled portions are met with in common goître. Such portions of bronchoceles in which necrobiotic degeneration has already taken place, and in which circulation no longer exists, will not be further affected by the ligature of the arteries. Whether the fluid contents of cysts can be resorbed after the operation is still an open question which needs further investigation. It may therefore be inferred that signal success can only be expected in bronchoceles in which necrobiotic degeneration has either

not yet commenced or only taken place in a very slight degree, as will be the case in rapidly growing goîtres of young people. In hard bronchoceles, on the contrary, which have already undergone chalky degeneration, the ligature of the arteries would be of no use whatever. The indications for this operation are, therefore, very limited.

The success of the operation will manifest itself in two ways. 1. These kinds of bronchoceles being extremely vascular, the first effect of the ligature of all the four arteries will be glandular anæmia; the tumor after operation will be softer and smaller than previously. 2. The second effect will be found in the impaired nutrition; the scanty supply of arterial blood will not suffice to keep up tissue-life in the bronchocele; the vessels will become obliterated, the epithelium and the interstitial tissue will waste away, and only cicatrous connective tissue will remain.

Whether cachexia strumipriva will also result after complete atrophy of the thyroid gland, when produced by the ligature of the arteries in children, cannot be decided beforehand, but it is possible that this cachexia will not supervene, because the atrophy will only gradually, and after weeks and months, become completed; and the organism will therefore gain time to accustom and adapt itself to the absence of the thyroid gland.

If all the four arteries be tied, the atrophy will very probably be permanent, but not so if the circulation remains free in one of the main arteries or is rapidly re-established by the vasa vasorem, which latter casualty has already been confirmed by experience. Permanent atrophy may be expected with confidence after the complete arrest of the circulation, the conditions brought about being very analogous to renal atrophy. If disintegration and decay of the epithelium of the thyroid gland have taken place, this organ will remain permanently atrophied; if, however, collateral circulation is established at an early period, bronchocele will form again. Professor Billroth recommends incisions at the external borders of the sterno-mastoid muscles as most convenient for tying the inferior thyroid arteries. He points out one circumstance which had nowhere yet been mentioned, —viz., the excessive thinness and brittleness of the walls of the inferior thyroid artery. It happened to him in three instances that this artery gave way, once when raising and isolating it with the grooved probe, once when introducing the aneurism-needle, and on another occasion whilst tying the ligature. Very profuse hemorrhage in such an accident takes place, and the seizing of the artery which retracts behind the scalenus muscle is troublesome and difficult, but he succeeded in every one of these three cases in taking hold of the vessel, but not without considerable loss of blood; in one case he was obliged to divide the scalenus in order to secure the ends of the artery with a broad clamp. As a rule, in tying the arteries he places in their continuity two ligatures, between which he divides the vessel. In his later operations he employed, in consideration of the brittleness of the arteries, only one ligature. No secondary hemorrhage took place in either of these cases. The operations by means of ligatures of very large bronchoceles are very difficult and full of intricacies, and the extirpation in most cases will be a by far easier proceeding.

Professor Billroth, up to the present time, has treated by ligatures four cases of common bronchocele, of which the following are the most important details:

Case I.—An otherwise healthy housemaid, aged 25, had been troubled for ten years with a very slowly increasing bronchocele in the median line, which at the time of its first treatment, in April 1885, had the size of a large apple, and caused some respiratory difficulties. After twelve injections of pure tincture of iodine the tumor considerably diminished in size, and the difficulties of respiration ceased. About twelve months later the goître recommenced growing, and at the end of February, 1887, had attained its former considerable size. On February 25, 1887, both the inferior thyroid arteries were tied. Ligatures of the superior arteries were deemed unnecessary, the superior portions of both lobes of the gland appearing normal. Except the large median tumor, which had partially become substernal, and had caused tracheo-stenosis, as could be demonstrated by the laryngoscope, no other nodules were found. The first effect was most satisfactory, and the goître had entirely disappeared after four weeks, when the patient was discharged. But the result was unfortunately not permanent. In the beginning of May, little more than two months after the ligature of the arteries, the patient returned with the bronchocele as large as before the operation. Professor Billroth now intended to tie the two superior arteries, but the patient, after repeated previous imperfect treatments, insisting upon a radical cure, he enucleated the tumor on May 14. Perfect recovery took place, as usually, after twelve days.

Case II.—A gamekeeper, aged 22, on his admission, on December 14, 1887, stated that his throat had gradually become uniformly thicker since six to seven years ago, and that he had only lately been incovenienced by a somewhat more difficult and whistling respiration when running or climbing mountains. His neck appeared uniformly rounded in all its parts, so that neither the muscles nor the larynx were visible. A great number of larger and lesser nodules were grouped in such manner as to present the appearance of an equally diffuse hypertrophy of the thyroid gland. The laryngoscopical examination showed tracheostenosis at the height of the second tracheal ring from displacement of the windpipe to the left side. The ligature of the left superior thyroid artery and of both the inferior arteries was performed on December 16, 1887, followed, on January 7, 1888, by the ligature of right superior thyroid artery. Although after the first, and more so after the second operation the subjective symptoms had considerably diminished, only a very slight decrease of the thickness of the neck was externally visible. The patient was discharged, with all his incisions healed, on January 16, and presented himself again on February 16. He breathes now without any difficulty when running or climbing. The laryngo-stenosis was still existing, but in a lower degree. The circumference of the neck, compared with its condition before the operation, had greatly diminished, but a considerable number of nodules could be felt by palpation. The result after a lapse of two months was imperfect, but as a gradual atrophy is still continuing, it is to be hoped that it will further proceed. It is also possible that in some of the nodules cystic or other kinds of softening are taking place, the resorption of which may be incomplete and accompanied by slow shrinking.

Case III.—A scoliotic, ill-nourished tailor, aged 18, with a bronchocele of equal size and character as in Case II. Ligature of all the four arteries on February 4, 1888, in one sitting, with most signal success. At the time of the discharge of the patient on March 3, twenty-eight days after the operation, the bronchocele was completely atrophied, and the appearance of the neck was perfectly normal.

Case IV.—A powerfully-built Caucasian, aged 26, with an enormous bronchocele, which commenced growing in his third year of life. Both lobes and the isthmus were of extraordinary size. A great number of hard nodules, covered by immensely distended veins, were imbedded in the hypertrophied, everywhere strongly pulsating tumor. No tracheostenosis. Circumference of the neck fifty-four centimètres (twenty-one inches). Ligatures of all four arteries were made in one sitting on March 5, 1888, immediately after which the bronchocele became softer, but without measurable decrease of its circumference. The incision healed by first intention in eight days. From the second to the sixth day slight icterus. On March 20, fifteen days after the operation, considerable diminution in size, circumference forty-eight centimètres (eighteen and one-half inches), but the tumor still very large. No veins conspicuous on the neck, no pulsation, no murmurs. Many small nodules in the soft stroma of the bronchocele. The patient feels perfectly well, and still continues under observation.

Favorably impressed by the result of the ligatures in these four patients, Professor Billroth proposes to perform this operation in other suitable cases, and in future will always tie the four arteries in one sitting. The slight icterus in Case IV. soon disappeared, and may have been caused by resorption of blood.

As regards the disfiguring effects, which likewise claim some consideration, especially in young females, he points out that the ligature of all the four arteries will of course leave four scars, whereas after the extirpation, when performed according to his methods, only one lateral cicatrix will remain, which may easily be hidden by a small necklace. But of much graver importance is the disfiguring appearance of a lean neck in which the thyroid gland has been completely removed. The trachea and the sterno-mastoid muscles will form prominent ridges, enclosing a groove-like depression at each side of the windpipe, which with every inspiration will deepen in the most unsightly manner. The atrophy after the ligatures will never proceed so far but that remnants of connective tissue of the size of a small thyroid gland will be preserved, and they will satisfactorily fill up the grooves at each side of the trachea.

Professor Billroth considers the ligature of the thyroid arteries as undoubtedly a most valuable addition to the surgical treatment of common hæmatocele, and he asserts that this method would be an incalculable boon if it were equally efficacious in carcinomas and sarcomas of the thyroid gland. But we have been sufficiently taught, he adds, by the formerly more frequently employed ligatures of the lingual arteries in unextirpable car-

cinomas of the tongue that this so much desired result will not be attained ; rapid disintegration of the carcinomatous neoplasms, but no harmless wasting, takes place. Nevertheless we ought not to be disheartened and deterred from submitting to further trials this rational mode of treatment with any available modification, although the only attempt of his for this purpose completely failed.

Case V.—The neck of a young woman, aged 26, was perfectly slender and normal until two months ago, when at the left side of the trachea a hard nodule formed in the thyroid gland, which rapidly increased in size. During the last days respiratory difficulties supervened, which exacerbated into dyspnœa, with attacks of suffocation. At the admission of the patient into the clinic on March 6, 1887, tracheotomy was immediately performed for asphyxia. On examination on the following day a hard but slightly movable painless tumor, of the size of a small apple, intimately connected with the trachea, was discovered. The trachea was so much bent to the right that its lumen was almost entirely compressed. Total extirpation of the tumor would most probably have necessitated the resection of a great portion of the trachea, of a portion of the larynx, and of the œsophagus, and of a part of the recurrent nerve. Such a mutilating operation, although possible without absolute danger of death, was too revolting to Professor Billroth ; he therefore, on March 10, tied both inferior thyroid arteries. The operation had no immediate effect on the size of the tumor. The patient, who had already been very cachectic, rapidly sank, and died on the following day. On examination the tumor proved to be a medullary sarcoma.

Ligatures may possibly be of some benefit if resorted to in the earliest stage of sarcomatous or carcinomatous bronchocele. In such desperate cases even this last remedy ought to be attempted.

THE CHARACTERS OF THE URINE IN PHENOL-POISONING FROM IMPURE SALICYLATE OF SODIUM.

Dr. H. T. Griffiths reports in the *Lancet* for June 16, 1888, the case of a woman, aged 22, suffering from subacute rheumatism, who was treated with salicylate of sodium, 20 grains every four hours. After taking in all three hundred and twenty grains, she exhibited some delirium, and complained of tinnitus, the urine passed at that time being of a dull, greenish-yellow color, highly acid, sp. gr. 1040, giving a strong violet reaction to perchloride of iron, containing no albumen or sugar, and having no microscopical characters of any value. The urine was left uncovered in a urine-glass, and was examined from time to time. On the twenty-second day it was still acid, not offensive in odor, and exhibited only a few sporules under the microscope. On the forty-fifth day it was still acid, smelt sour, and showed groups of single cells of a torula form, but not a single bacterium termo. On the seventy-fifth day a mass of penicillium glaucum covered half the surface of the urine, which was still acid, gave a strong coloration with perchloride of iron, and showed a few specimens of the bacterium termo. On the eighty-ninth day the urine was less acid, was of a deep brown-black color, with some increase in the amount of the bacteria, but some crystals of triple phosphates were seen. On the ninety-fourth day the urine became alkaline and offensive, but even then gave a strong reaction to perchloride of iron, and only occasional specimens of the bacterium termo were seen ; in fact, the urine showed comparatively little organic life under the microscope. The parcel of impure salicylate of sodium, having produced similar symptoms in other patients, was speedily condemned.

PARALDEHYDE IN OBSTINATE VOMITING.

In the *Albany Medical Annals* for June, 1888, Dr. U. B. La Moure states that, having been in the practice of prescribing paraldehyde in the treatment of insomnia in alcoholism, he has noticed that, even although the first dose was sometimes rejected from the stomach, when the patient was affected with gastritis and obstinate vomiting, the second dose, given usually in one or two hours, was almost invariably retained, even though there had been absolute inability for the retention of food in any form previous to treatment. This experience suggested to him that paraldehyde might be used in vomiting from other causes, and he has consequently employed it in the vomiting from ovarian irritability and the vomiting of pregnancy, and in the nausea of migraine, with, as he states, the most gratifying results.

His mode of administration consisted of forty drops of paraldehyde to an ounce of simple elixir, of which one teaspoonful may be given in water, repeated in half an hour,

if required. This small dose is not hypnotic, acts as a sedative upon the mucous membrane of the stomach, and has a tranquillizing effect on the whole system. The only objection to its use is the disagreeable odor of the drug.

THE TREATMENT OF HÆMOPTYSIS BY IODOFORM.

Many of the remedies in vogue for the treatment of pulmonary hemorrhages are nearly entirely efficacious, are too slow in their action, or disorder the stomach. MM. CHAUVIN and JORISSENNE state in *Le Progrès Médical* for May 19, 1888, that they have for some time employed iodoform in the treatment of this affection, and their results have been so constantly successful that they have now almost entirely abandoned the use of other methods of treatment. These authors report fourteen cases of pulmonary hemorrhage of various degrees of severity, in which they claim that the use of iodoform, associated with tannin, in all cases proved an excellent hæmostatic; that the relief was but rarely followed by relapse; it is more rapid in its action than ergotin, and is free from the inconveniences of the latter, and that iodoform will succeed in cases where ergotin has failed. From the small dose given no disturbance of the stomach is produced. Ordinarily they have administered the iodoform combined with tannin. They have used the following form: Iodoform, seven to eight grains; tannin, two grains, combined with any excipient to make a pill, of which three to five may be taken as occasion demands. Although they have usually combined the iodoform with the tannin, they state that iodoform is the active agent in the treatment, and that it will be quite as successful if administered alone.

THE TREATMENT OF CARBUNCLE BY CARBOLIZED SPRAY.

PROFESSOR VERNEUIL, at the meeting of the Academy of Medicine of Paris, held on January 17 last, made an interesting communication on the treatment of carbuncle by carbolized spray. He stated that in 1883, in a severe case of carbuncle, he directed that carbolized spray be frequently applied, in order to thoroughly disinfect the parts previously to an operation being performed. To his surprise, he found that under the use of the carbolized spray such improvement had declared itself that surgical interference became unnecessary. Henceforth he exclusively resorted to the carbolized spray in all cases of carbuncle. Whether they were large or small, painful or indolent, complicated or not with diabetes, previously opened by surgery, by sloughing, or with the skin as yet unbroken, in every case the same local treatment was applied, and always with a successful result.

Professor Verneuil prefers the steam spray. The larger the carbuncle and the more perfect the skin, the more powerful the apparatus does he select. He places the apparatus a short distance (about ten inches) from the diseased parts, regulating the intensity of the spray according to the feelings of the patient. Usually he allows the spray to reach the parts unprotected; occasionally, however, he covers them with a layer of muslin. He employs a two-per-cent. solution of carbolic acid, and applies the spray three or four times daily, for about twenty minutes each time. Between the sittings he dresses the carbuncle with lint soaked in carbolic-acid solution of the same strength. He is careful to protect the parts around the carbuncle from the action of the spray.

Led by the success of this method of treatment, DR. H. BLANC employed it in the case of a man, aged 54, suffering from a large carbuncle, involving the whole of the nape of the neck, extending from the sixth cervical vertebra, and from one mastoid process to the other. The following are the details of the case as reported in the *Lancet* for June 9, 1888:

The disease was of eleven days' duration. Beyond poulticing no other treatment had been applied. The whole of the nape of the neck was swollen, hard, and of a dusky livid color. A few superficial sloughs, through which some sanious pus discharged, had formed in two or three places, but not in the centre of the mass. The pain was intense, totally preventing sleep. The patient was greatly exhausted, very weak, and depressed; there was complete anorexia; the pulse was 120, feeble, and compressible; the skin clammy; the temperature on admission 102.3°; the urine scanty, but containing neither albumen nor sugar. The small hospital possessing no steam spray, the writer used a large hand spray instead, previously warming the carbolic-acid solution; in other respects the treatment as laid down by Professor Verneuil was strictly carried out. After the first twenty-four hours the pain lessened, and there

was an evident arrest in the progress of the disease. On the third day of the treatment a decided improvement set in; the temperature fell to normal; the central portion of the carbuncle—a very oblong centre—was softer; the hard, brawny circumference was less infiltrated, and the parts altogether looked more healthy. The parts were still very tender on the slightest pressure, but the pain had mostly disappeared. Laudable pus issued through the largest of the spontaneous openings, and the sloughing process was elsewhere arrested. The further notes of the case are as follows:

March 6 (fourteenth day of treatment).—The carbuncle is greatly reduced in size; the surrounding infiltration has disappeared. Some cellular slough was removed through the openings. The general condition is greatly improved, the carbolic-acid treatment omitted, and the parts dressed with boracic acid ointment and salicylated cotton-wool.

March 12.—A large cellular slough some five inches in length was removed through the only opening remaining.

March 21.—The patient takes his meals at the convalescent's table, and walks in the garden when the weather is fine. Some slight discharge through the opening.

March 29.—A small granular ulcer occupies the site of the spontaneous opening; the parts have otherwise returned to their normal condition. The patient is now quite well, and has gained much in flesh and in strength lately.

SOME OF THE USES OF HYDRIODIC ACIDS.

In the *Weekly Medical Review* for June 9, 1888, Dr. Wm. C. Wile relates a number of cases in which he has employed hydriodic acid. In a severe case of chronic asthma, complicated with chronic bronchitis, in which iodide of potassium was not tolerated, the use of hydriodic acid was followed by almost immediate relief from the asthmatic symptoms, rapid amelioration of the cough, and decreased expectoration. The sputa, which was thick and viscid, became thinner in character, and the patient's health began to improve, and after three months of the use of the syrup of hydriodic acid in increased doses, until two teaspoonfuls were taken three times a day, complete recovery took place, and from that time until her death from pneumonia, two years later, there was no relapse. In chronic bronchitis it has produced in most cases excellent results, and can be given when iodide of potassium cannot be tolerated. In cases of long-standing bronchitis, smaller doses, frequently repeated, are of signal service when larger doses do not seem to accomplish the same result. In lead-poisoning, this remedy, combined with keeping the bowels quite free and the application of the faradic current, was the only means employed, and with satisfactory and often surprising results. It would, in fact, appear to be a practical remedy in all cases where iodine is indicated.

THE TREATMENT OF STERILITY AND OBSTRUCTIVE DYSMENORRHŒA.

At the meeting of the Royal Academy of Medicine in Ireland, Dr More Madden read a paper with the above title (*Lancet*, June 9, 1888). He said that in the recognition of stenosis, either of the uterine cervical canal, or of the Fallopian tubes, will be found the best key to the study of the pathology and to the successful treatment of both these closely associated morbid conditions. The frequency of such cases is far greater than is generally admitted, and in his own hospital they furnished nearly eleven per cent. of all the gynæcological cases there treated. Of all the ailments of female life, few give rise to greater or more persistent suffering, or produce more disastrous effects, not only on the general physical health, but also on the cerebro-nervous system, and on the moral constitution of the patient, than result from well-marked obstructive dysmenorrhœa. The importance of the last-mentioned consequence of dysmenorrhœa—to which he directed special attention in an article of his on the "Disorders of the Female Sexual Functions," in Quain's "Dictionary of Medicine"—is by no means so generally recognized as it should be. The effects of the second of the morbid conditions that form the subject of this communication are certainly of no less moment, in a practical aspect, than the results to which he had just referred as consequent on the first-named ailment; the latter involving, as they may do, not only the physical health and well-being of the patients, but also, in too many instances, intimately affecting their social interests and the happiness of conjugal life.

Dr. W. J. Smyly believed that the frequency of stenosis had been greatly exaggerated.

Dr. Mason said there was no doubt that

obstructive dysmenorrhœa complicated with sterility was an exceedingly common complaint, and was a cause of great physical suffering and mental trouble. He held that, once the cervix was divided bilaterally, there was no necessity for dividing it any more; and the use of Dr. Madden's dilator was, he thought, calculated to cause a danger of pelvic inflammation. The treatment he (Dr. Mason) ordinarily followed was to divide the cervix bilaterally for its entire length, enlarge the opening of the os externally with a scalpel, and then to apply some astringent—perchloride of iron—in some cases, and to plug the vagina in others. A number of the women operated on for this disease became pregnant afterwards, but that number was not large in proportion to the number of operations. The number of cases relieved by operation was, however, large; a fair prospect of cure might be held out to every patient operated on for dysmenorrhœa.

Dr. Atthill said the first question was, Did stenosis of the cervix ever *per se* cause dysmenorrhœa? He was inclined to answer that question in the negative. He had seen instances in which the os uteri was so small that he could only get an ordinary surgical probe into it, and in which, nevertheless, there was no dysmenorrhœa. But that they might have cases of dysmenorrhœa indirectly depending on a small pinhole os uteri and a conical cervix was perfectly true. He also totally denied that a small cervix was *per se* a cause of sterility. In cases of small os uteri, where there was no dysmenorrhœa, the uterus and cervical canal were nearly always what was termed infantile or rudimentary, and menstruation in those cases was nearly always scanty, but in the main perfectly painless. In nearly every case of stenosis of the uterus in which pain existed there was a more or less unhealthy condition of the uterine mucous membrane, which was vaguely termed uterine catarrh,—the catarrh being a symptom and not a cause, the latter being some form of intra-uterine disease. He looked on division or dilatation of the cervix in those cases as the first step towards the cure of the dysmenorrhœa, and consequently the first step towards the cure of sterility. In many cases he divided the cervix, and treated the uterus secondarily for sterility, and very often with great success, where there was no dysmenorrhœa at all. It was his opinion, and had been for many years, that the cases of dysmenorrhœa and sterility in which there were a conical cervix and small os could never be cured without first dividing the cervix. But division—or dilatation, if that were preferred—was a step towards completing the cure, the *rationale* being that by making the cervix uteri free the escape was allowed of the pent-up discharges, which otherwise caused irritation and pain. With respect to the modes of making the uterus wide, in the first place he entirely disapproved of dilatation as a cure. He had seen it tried over and over again, and the patients pronounced to be cured because they were free from the dysmenorrhœa, and after a couple of months all the symptoms would return.

QUINOLIN—A NEW ANTISEPTIC.

This substance (C_9H_9N) is obtained synthetically from aniline, nitro-benzoin, glycerin, and sulphuric acid. It is very soluble in alcohol, in ether, in chloroform, and in benzine, but it is very slightly soluble in water. According to Dormat (*Journal de Médecine de Paris*, June 10, 1888) it possesses antiseptic powers even when in aqueous solution. In a solution of .02 per cent. it prevents the putrefaction of urine, while suppressing the coagulability of the blood and diminishing that of albumen. In a .04 per cent. solution it prevents the putrefaction of the blood. The author recommends its employment as a gargle, which he states that he has used with considerable success in diphtheria. One part may be dissolved in 500 parts of peppermint-water, to which 50 parts of alcohol are added. Quinoline forms salts of which the salicylate and tartrate may be employed for surgical purposes on account of their high solubility in water. One part of the tartrate of quinoline dissolved in 150 parts of water is said to form an excellent injection for the treatment of gonorrhœa.

CINERARIA MARITIMA IN THE TREATMENT OF CATARACT.

Mr. W. Thiselton Dyer publishes in the *Phar. Jour. and Trans.* for May 26, 1888, a letter from Dr. A. Mercer, who states that having been unsuccessfully operated on for cataract, and being compelled to relinquish his practice on account of blindness, while on a visit to Venezuela was asked by friends there and strongly urged to try the curative effect of a plant called *Cineraria maritima*, the effect of which in removal of cataractal blindness was greatly extolled. As the writer was then

totally blind, with nothing to lose, and with more incredulity than hope in the experiment, he commenced the use of the juice of this plant, 2-drop doses in each eye three times a day, and on the fourth day he observed a gleam of light in the right eye. The treatment was steadily persevered with, and he states that he continued to experience new and fresh evidences of the favorable action of this potent agent, and he now states that he can discern figures, and even faces, under a favorable light, with objects of furniture throughout the apartments, and can even distinguish the fingers and tell the hour by a white-dial watch.

These results occurred from the application of this juice to the eye which had not been operated on, and in which there had been gradually forming cataract of the soft lenticular character. In the eye unsuccessfully operated on by Mr. Power, which had also been similarly treated, there occurred the gradual dispersion of what he describes as a curtain of the blackest darkness hanging over and covering two-thirds of the orbit. With this there was also great weight, pressure, and occasionally pain throughout the organ; but all these, he states, have disappeared, and there is now unmistakable vision, so that he can discern his hand and the separation of the fingers when held up before it. All this is stated to be the result of little more than two months' treatment.

He further writes that in its application to the eye it produces no irritability or inflammatory action whatever, beyond a burning sense of pain which lasts only a couple of minutes, followed by a profuse lachrymal discharge, tinged with the coloring matter of the liquid.

Dr. Mercer, however, states that the plant is extremely scarce in the colony of the Port of Spain, and his letter was written to Mr. J. H. Hart, superintendent of the Botanic Gardens of Trinidad, with a hope of obtaining some of the plant for further use. Mr. Hart in turn forwarded the letter to Mr. Dyer, the director of the Royal Gardens at Kew, who in turn gives it for publication.

The narrative seems to bear so many marks of intrinsic accuracy and the position of the different gentlemen mentioned, Dr. Mercer having held the government office of Resident Medical Officer of the Colonial Hospital in the Port of Spain, that this communication seems worthy of reproduction, and the juice of this plant certainly should be subjected to further trial.

CARBOLIC ACID IN THE TREATMENT OF ENTERIC FEVER.

In the *Lancet* of June 23, 1888, Dr. F. Sidney Gramshaw publishes the results of his experience, extending over a period of seven years, with the use of carbolic acid in one hundred and sixteen cases of enteric fever. In this series he does not include cases of abortive typhoid or simple continued fever, although he believes that the medicine practically causes the fever to be cut short in the second week. The following is a general description of the management, diet, and carbolic treatment of enteric fever as employed by the author.

The patient is of course confined to bed, in a well ventilated room, if possible, and every effort is made to insure that no particle of solid food of any kind is administered by over-anxious relatives. The diet is restricted to milk toast and water, barley-water, and calf's-foot jelly; new milk is always insisted upon as the main support, from a quart to three pints being given to an adult in the twenty-four hours. The carbolic acid is ordered in a mixture, of which this is the prescription: Take of carbolic acid (Calvert's extra pure for internal administration), twelve minims; tincture of iodine (B. P.), sixteen minims; tincture of orange-peel, one drachm and a half; simple syrup, three drachms; water to eight ounces; the dose to be an ounce every four hours for the first fortnight, or until the urgent symptoms yield, when the same dose is administered three times a day. The good effect is manifested almost immediately. In two days the pulse slows and gains in strength, the temperature falls, the tongue becomes moist, all diarrhœa ceases, and the general condition of the patient is so much improved that, as a rule, in a week all anxiety is at an end, and the case progresses quietly towards recovery. It sometimes happens that a case is cut short by this treatment as suddenly as is a case of acute rheumatism by the exhibition of salicylate of sodium; but more generally the fever runs its course of thirty days before all danger of relapse is past, and he found it better to continue the medicine until the thermometer shows no rise of temperature for three or four clear days. If the pulse at any time rises above 120, the temperature 105°, or if sordes form on the lips or teeth, either champagne or brandy, and sometimes both, is given every two hours. This, however, is rarely necessary. Complete abstinence from any kind of solid food until all traces of fever have disappeared is insisted upon, and when

the patient does return to his ordinary diet, the resumption of solids is a gradual progress from soup to boiled sole, chicken, mutton, and soft vegetables. Beef-tea is carefully avoided so long as the temperature is abnormal, as it so frequently gives rise to troublesome diarrhœa. The carbolic-acid combination is usually taken without trouble or difficulty. A day or two after commencing with it patients always complain that everything they take tastes of the medicine; this is unavoidable, and need give no anxiety unless vomiting is excited, when it is a good plan to reduce the dose of carbolic acid and to add a small quantity of dilute nitro-hydrochloric acid. It is easy to detect the smell of carbolic acid in the breath and perspiration, but the author has rarely noticed carboluria. It must also be noted that not only does diarrhœa cease, but the opposite condition—namely, obstinate constipation—is generally induced.

Aperients are decidedly to be avoided; and if the bowels do not act after some days, Dr. Gramshaw administers an enema of warm soap and water, or a small quantity of castor oil, emulsified in warm water with the yelk of an egg. If after convalescence there is trouble in getting a regular evacuation, he gives small doses of belladonna and salad oil. Dr. Gramshaw does not think that the remedy owes its antipyretic action to a direct influence on the muscular activity through stimulation of the vagus or cardiac gangli, but he leans to the opinion that the presence of carbolic acid in the system arrests the production or growth of the already produced typhoid bacilli (a statement which the author acknowledges himself incompetent to prove), and that ulceration in the intestine is prevented, and ulcers already formed are induced to heal rapidly. In support of this latter statement he mentions the fact that healthy action is rapidly set up in old standing ulcers of the leg, when carbolic acid is administered internally in small doses. While there can be no doubt that the common-sense method of treating typhoid fever by careful dieting and nursing is absolutely essential, there also can be no doubt that if carbolic acid (which, by the way, may be combined with iodine, as suggested by Dr. Rothe) acts in the manner claimed for it, it is better to secure comfort to the patient and assist him through the action of drugs on the by-road to convalescence. Stimulants, therefore, may be given if necessary, without hesitation, and to assist recovery when a tonic is needed, some cinchona preparations and the mineral acids may be prescribed. Dr. Gramshaw publishes an analysis of his cases, which are stated to have belonged to all classes of life, and the surroundings of some of the poorer cases were not conducive to cleanliness or possibility of good sanitary arrangements. The result of every case but one was complete recovery, and the notes that he publishes indicate that some of them must have been of a very grave character.

THE TREATMENT OF HABITUAL CONSTIPATION IN INFANTS.

Sluggishness of the bowels in infants is a common source of trouble, and the derangement is one which is not always found easy to overcome. In the *British Medical Journal* of July 7, 1888, Dr. Eustace Smith, the well-known authority on diseases of children, publishes such a valuable article on the consideration of this condition that we feel no apology is needed in reproducing it here almost entire. Dr. Smith draws attention to the fact that in habitual constipation in children the use of aperients gives only passing relief.

The bowels, indeed, are unloaded for the time, but when the action of the aperient is at an end, they are left no less sluggish than before. Habitual constipation is very common in infants who have been brought up by hand; and on inquiry, the trouble will often be found to date from the time at which bottle-feeding was begun. Still, infants at the breast are not exempt from this annoying derangement. A deficiency of sugar in the breast-milk, or, as is sometimes seen, a milk the curd of which makes a firmer clot than is common in human milk, will often cause habitual torpor of the bowels which resists treatment with some obstinacy.

It is, no doubt, to improper, or at any rate inappropriate, feeding that the bowel trouble is usually to be referred. An excess of starch in the diet, or any food which overtaxes the child's digestive power, and thus burdens the alimentary canal with a large undigested residue, may set up the costive habit. By such means a mild catarrh of the intestinal mucous membrane is excited and maintained. There is excess of mucus, and the fæcal masses, rendered slimy by the secretion, afford no sufficient resistance to the contractions of the muscular coat of the intestine, so that this slips ineffectually over their surface.

Another cause of constipation is dryness of the stools. Even in the youngest infants

the evacuations may sometimes be seen to consist of little round hard balls, often the size of sheep droppings, which are passed with difficulty every second or third day. This form of costiveness is generally due to insufficiency of fluid taken. The food is made too thick, or the needs of the system in the matter of water are in some way overlooked. But whether the constipation be due originally to excess of mucus or deficiency of fluid, it cannot continue long without affecting injuriously the peristaltic movement of the bowels. As the colon grows accustomed to be overloaded, the intestinal contents can no longer exert a sufficiently stimulating influence upon the lining membrane, and the muscular contractions begin to flag. If the infant be poorly fed and badly nourished, this languor of muscular contraction may be aggravated by actual weakness of the muscular walls; and as under these conditions the bowel is apt to be overdistended by accumulation of its fæcal contents, the expulsive force at the disposal of the patient is seriously impaired. Constipation, resulting from the above causes, is often made more obstinate by the infant's own efforts to delay relief. A baby whose motions are habitually costive knows well the suffering which undue distension of the sphincter will entail, and often yields to the desire to go to stool only when it is no longer possible for him to resist it. The pain is sometimes aggravated by the formation of little fissures about the anus, and the violent contraction of the sphincter set up by the presence of those fissures forms an additional impediment to free evacuation.

There is another form of constipation in infants which we should always be vigilant to detect. This is the torpidity of the bowels induced by opium. In well-to-do families the use of soothing syrups and other narcotic preparations is now less common than was at one time the case; but now and then we find a baby drugged for reasons of her own by an unscrupulous nurse, and showing the earlier symptoms of narcotic poisoning. So long as the sedative continues to be given the bowels are costive, the child often vomits, his relish for food in great part disappears, and he lies with pupils firmly contracted in a dull heavy state, from which he cannot easily be roused. In young babies the use of opium seems to lessen the action of the kidneys, the urine is scanty, and on examination of the surface of the body the healthy elasticity of the skin will be found to be seriously impaired. When pinched up between the finger and thumb the skin lies in loose folds on the abdomen or only slowly recovers its smoothness. If this inelasticity of skin be noticed in a baby whose pupils are closely contracted, and who seems habitually heavy and drowsy, with little relish for his food, it is well to remember that these symptoms may possibly be due to the action of a narcotic.

An infant whose bowels are habitually costive is not necessarily injured by the want of a daily relief. Often the child seems perfectly well in health, and, except for occasional local discomfort when he gets rid of an unusually large or hardened mass, may appear to suffer no inconvenience at all. In other cases there is flatulent distension or frequent colicky pain, the child sleeps badly, has a furred tongue, and cares little for his food; the motions are often light-colored from undigested curd, and are passed with violent straining efforts, during which the bowel may prolapse or the navel start. This straining is a not uncommon cause of hernia.

In remedying this condition attention to the feeding and clothing of the baby is of little less moment than the use of drugs. When the infant is at the breast a teaspoonful of syrup given three or four times a day before a meal will often quickly restore the normal regularity of the bowels. If the stools are habitually dry and hard, we should see that the child takes a sufficiency of liquid with his food. In addition, it is useful now and then to make him drink some plain filtered water. In the case of a baby in arms, the possibility that the child may be thirsty, and not hungry, seems rarely to be entertained; but in warm weather, when the skin is acting freely, the suffering among young babies from want of water must often be acute. At such times the urine is apt to be scanty and high-colored, and may deposit a streak of uric acid on the diaper. When fluid is supplied, the secretion, from both the bowels and the kidneys, quickly becomes more healthy; and a dessert-spoonful of some natural saline aperient water, given at night, aids the return of their natural consistence to the stools.

The form of constipation which is due to mild intestinal catarrh is common enough in young babies. This is owing, no doubt, in great measure to over-abundant feeding with starchy matters, or to the giving of cow's milk without taking due precautions to ensure a fine division of the curd. Still, it cannot be denied that we sometimes find the

same derangement in infants whose diet is regulated with proper care and judgment. In them the intestinal catarrh is frequently the consequence of exposure, for the sudden withdrawal of all protection from the lower limbs and belly, which the process known as "short-coating" too commonly involves, is a fruitful cause of chill. In children so denuded, the feet, and even the legs as high as the knees, may be quite clammy to the touch. Under such conditions the susceptibility of the patient to alternations of temperature must be extreme, and the bowels are, no doubt, often kept in a state of continued catarrh from rapidly recurring impressions of cold.

Where the constipation is due to this cause our first care must be to protect the infant's sensitive body so as to put a stop to the series of catarrhs. To do this it will not be sufficient to swathe the belly in flannel. The legs and thighs must also be covered, for a lengthened experience of these cases has convinced me that so long as a square inch of surface is left bare the protection of the child is incomplete. We should next see that the infant's dietary is regulated with due regard to his powers of digestion. Excess of starch must be corrected, and it is best to have recourse to one of the malted foods. Mellin's food is especially valuable in cases where there is this tendency to constipation, as in many children the food has a very gentle laxative effect; but as Mellin's food contains no unconverted starch, and can do nothing to prevent the formation of a dense clot when the curd of milk coagulates in the child's stomach, it is advisable, when giving it with milk, to ensure a fine division of the curd by the addition of some thickening material, such as barley-water. A child 6 months old will usually digest well a good dessert-spoonful of Mellin's food, dissolved in milk, diluted with a third part of barley-water. A certain variety in the diet is of importance in all cases where the digestive power of the infant is temporarily impaired. Therefore, it is advisable to order an additional food to be given alternately with the Mellin and milk. It must be given, like the Mellin, with cow's milk, but without the barley-water, for the pancreatine it contains has a digestive action upon the curd, and removes the tendency of the latter to firm coagulation. In addition to the above, if the child has reached the age of 10 months, he may take a meal of veal broth or beef-tea once in the day, and with this it is advisable to give some vegetable, such as broccoli or asparagus, thoroughly well boiled. At this age, too, the milk for the morning meal may be thickened with a teaspoonful of fine oatmeal, and sweetened with a teaspoonful of malt extract. In the case of many infants suffering from habitual constipation, the appetite is very poor, and great difficulty is found in persuading them to take a sufficient quantity of nourishment. This indifference to food is almost invariably associated with coldness of the extremities, and usually disappears when measures are taken to supply necessary warmth to the feet and legs.

In all cases where an infant's bowels are habitually costive, it is of the first importance to enter thoroughly into these questions of clothing and diet. In addition, care should be taken that the bowels are regularly stimulated by manipulations from without. The sluggishness of peristaltic action, which forms a part of every case of habitual constipation, may be very materially quickened by judiciously applied frictions. The nurse should be directed to rub the child's belly every morning after the bath. She should use the palm of the hand and ball of the thumb, and, pressing gently down upon the right side of the abdomen, carry the hand slowly round in a circular direction, following the course of the colon. The frictions may be continued for five minutes. In obstinate cases the child may be laid down upon the bed, and the bowels gently kneaded with the thumbs placed side by side; but in this case, too, the movements should follow the course of the larger bowel.

In addition to the above treatment, more special measures have often to be employed. These may be divided into two classes,—the class of suppositories and injections, and that of remedies given by the mouth.

The class of suppositories and injections aims at producing an immediate evacuation of the bowel, and in no way tends to promote more regular action in the future. These remedies are, therefore, useful in clearing the way for further treatment, but there their value ends. A suppository of Castile soap introduced into the rectum is a time-honored method of inciting an evacuation in the child. Another old-fashioned plan has lately been revived, which consists in the injection of 40 or 60 drops of pure glycerin into the lower bowel. In each case energetic peristaltic action of the alimentary canal is induced, and the bowel is thoroughly emptied of its contents. Of these applications the action of the glycerin is very

rapid, and in a few minutes the effect of the injection is seen. The soap suppository acts more slowly.

Injections of soap and water, or other liquid, have an entirely mechanical action in relieving the patient. To be effectual such injections must be large, consisting of at least half a pint of fluid, and should be thrown very slowly into the bowel. Still, although of service when given only occasionally, the frequent use of large injections is not to be recommended; indeed, this method of treatment is distinctly hurtful in cases where the costiveness has become a habit. Even in young babies great dilatation of the bowel and serious weakening of its muscular coat have often followed the daily use of the enema pump.

For the permanent cure of habitual constipation remedies given by the mouth are greatly to be preferred, but, at the same time, strongly acting purgatives are worse than useless. Our aim should be to find the smallest dose which will awaken a normal degree of energy of peristaltic action, and to give this dose regularly so as to induce a habit of daily evacuation. The daily dose is most efficacious when combined with a remedy which tends to give tone to the muscular coat of the bowel. For this purpose a useful draught is composed of half a drop of tincture of nux vomica combined with ten drops of tincture of belladonna and twenty of infusion of senna, made up to a fluidrachm with infusion of calumba. This draught should be given at first three times a day before food, but soon two doses in the day will be sufficient, and it is rarely long before one dose given at bedtime has a sufficiently laxative effect. Our object is not to excite watery evacuations, but to induce as faithful an imitation as possible of a normal action of the bowels. The liquid extract of cascara is useful in many cases, especially if combined with tincture of belladonna. Twenty, thirty, or more drops of cascara extract, with ten of the belladonna tincture, may be given with a few drops of glycerin in a little water every night. In the West of England a remedy held in high esteem consists of half a grain of sulphur colored red with cochineal.

In cases where the motions are drier than natural, as if from imperfect secretion of the intestinal glands, the addition of liquid to the diet, already recommended, may be supplemented by the administration of some saline aperient two or three times a day. This treatment is made more effectual when the saline is combined with small doses of nux vomica and quinine. For a baby 6 months old five to ten grains of sulphate of sodium may be given with one-quarter of a grain of quinine, half a drop of tincture of nux vomica, and a minim of aromatic sulphuric acid, in a teaspoonful of water three times a day before food. As in all cases where the remedy prescribed has been chosen with judgment and given in appropriate quantity, the continued administration of this draught, so far from rendering the bowel dependent upon the medicine, stimulates it to act spontaneously; so that the dose has soon to be given less frequently, and in no long time can be discontinued altogether.

By means such as the above the most obstinate case of constipation in the infant can be cured with little difficulty, but to be successful the treatment must not be restricted to mere drug-giving. The food of the child must be regulated with care, his clothing must be inquired into, and his general management passed under review. Where this is done, drugs, given in comparatively small doses, will act with sufficient energy, and will soon restore their normal regularity to the bowels.

THE USE OF BICHLORIDE OF MERCURY IN GONORRHŒA.

In 1887, Dr. Geo. E. Brewer detailed at some length the results of the treatment of one hundred and fifty cases of gonorrhœa by the use of mild solutions of bichloride in the urethra by the continuous irrigation and hot retrojection.

In the acute cases the distinction was made between the specific or gonorrhœa form of urethritis and the non-specific or simple variety, and in each of these classes, as well as in chronic cases, the success of treatment was noted. At the close of the paper the following conclusions were drawn:

First.—That in uncomplicated cases of acute gonorrhœa urethritis, treated by prolonged and frequent irrigation with bichloride of mercury, recovery may be expected within two weeks. That this period may be considerably shortened by the early inauguration of treatment, by absolute rest, and by the avoidance of stimulants. That it may be indefinitely prolonged by irregularity in treatment, by inordinate physical exertion, and by indulgence in alcoholic and venereal excesses.

Second.—That the retrojection of a hot solution of bichloride possesses all the advan-

tages of the former procedure, and in addition causes a more rapid subsidence of the inflammatory symptoms, a greater feeling of comfort to the patient, and is attended with less annoyance and trouble.

Third.—That in cases of acute non-specific urethritis the favorable influence of each of these methods is strikingly apparent.

Fourth.—That in cases of chronic purulent urethritis, no agent produces such rapid and permanent improvement as irrigation, especially when combined with astringents and heat.

Fifth.—That the percentage of complications occurring in cases treated by these methods is far below that observed when the ordinary treatment is employed.

Since then he states in the *Journal of Cutaneous and Genito-Urinary Diseases* for July, 1888, that he has records of one hundred and two additional cases of urethritis treated by these methods, the results being apparently more satisfactory even than the first series, and apparently fully justifying his conclusions. In the first series of cases the average duration of treatment to the cessation of all discharge was seventeen and a half days, while in his last series it was reduced to thirteen days. Inflammatory complications were rare, occurring but five times in two hundred and fifty cases. Of these, three were cases of epididymitis, one of cystitis, and one of prostatitis; while in three hundred and fifty-two cases treated by other methods, epididymitis alone occurred in sixteen per cent. of the patients.

Hot retrojection has proved a most valuable procedure in the treatment of chronic urethral discharges. Eight cases, in which the discharge had persisted for several months, were relieved after one treatment.

Cases are occasionally encountered, however, which will not yield to these methods. In all such the urethra is found to be the seat of one or more strictures, which render its walls rigid and inelastic, thereby preventing the free circulation of the fluid within its cavity.

THE INFLUENCE OF TEMPERATURE ON THE CONVULSIONS PRODUCED BY COCAINE.

At the meeting of the Académie des Sciences, MM. LANGLOIS and RICHET (*Le Progrès Médical*, June 16, 1888) announced that the higher the temperature of an animal the smaller the dose of cocaine necessary to produce convulsions. On the other hand, moreover, while this elevation of body-temperature is an adjuvant cause to the production of convulsions, the cocaine itself produces an increase in body-temperature before the convulsions are produced. When finally the convulsions appear the temperature is still higher elevated, and this again increases the violence of the convulsions. When such a state of affairs is reached the authors find that the only way in which the life of the animal may be saved is by cooling it, and they infer that a similar state of affairs exists in the case of many diseases where auto-intoxication plays so important a rôle. The febrile temperature increases the sensibility of the organs to poisons, and the poisoning of the organism is in itself a cause of the elevation of the temperature.

It would therefore appear, according to them, that active artificial cooling should be a method which is generally apt to diminish the effects of poisonous convulsive agents.

THE TREATMENT OF SYPHILIS, CHANCROID, GONORRHŒA, AND GLEET.

In the *Lancet* for May, 1888, MR. FREDK. W. LOWNDES publishes some notes on the treatment, both general and local, of syphilis, chancroids, gonorrhœa, and gleet, as the result of twelve years' experience in the Liverpool Lock Hospital and the Seamen's Dispensary. The following is an abstract of the more important points in his practice:

The Treatment of Chancres and Chancroids by Iodoform.—The value of iodoform as a local remedy is generally acknowledged, the difficulty in its use being its very disagreeable and penetrating odor; for its disguisal Mr. Lowndes recommends, as already suggested in the columns of the GAZETTE, the mixing of the powdered iodoform with a few grains of very finely-powdered coffee. This will effectually disguise the iodoform smell; or, instead of coffee, about five drops of the oil of rosemary may be added to an ounce of the ointment.

Local Mercurial Applications.—In addition to the old black wash, which still holds its own as a favorite application, especially for chancres, the author recommends blue ointment, diluted with an equal, double, or treble quantity of benzoated lard, especially when the sore is of considerable extent. In these cases the local application of the ointment will often suffice to afford constitutional treatment without any internal administration of

mercury. Where there is much irritation, a powder, consisting of equal parts of gray powder and oxide of zinc, each rubbed into a very fine powder, will be found an excellent application, sometimes healing a large angry-looking sore in a very short time, it being seldom necessary to apply the strong escharotics often recommended in text-books.

General Mercurial Treatment.—Mr. Lowndes's practice is to give two grains of gray powder with three grains of Dover's powder, made up in pills with confection of roses. Recently he has been using two grains each of mercury and chalk and Dover's powder, and a sufficient quantity of extract of hyoscyamus. The reason for giving the latter is that it makes a better-shaped pill than the conserve of roses, or almost any other extract. When patients complain that the pills cause griping they may be changed for one with three grains of blue pill and a quarter of a grain of opium.

Mercurial Inunction.—That this is the most effectual of all modes of administering mercury, all who have had experience will admit. But it is somewhat remarkable to observe the different modes of using it given by different authors. Thus, one recommends that the ointment be rubbed in in the morning after breakfast; another that it should be done shortly before going to bed; one prefers the naked hand, another prefers gloves; one prefers the mercurial ointment, another the oleate of mercury; and so on *ad infinitum*. Mr. Lowndes has found the results much more satisfactory in hospital than in private practice, and in cases where there had been much neglect, and the induration was very marked, the benefits were very gratifying. The author has found a modified form of inunction very useful in many cases, and applicable in most cases of primary ulcers, especially in cases of phimosis with well-marked induration. His plan has been to wrap a piece of lint, on which about a drachm of the strong mercurial ointment has been spread, round the penis near the abdomen, and to change this every night and morning. With an intelligent patient, and in suitable cases, it acts most satisfactorily, reducing the induration and the phimosis in a very short time. Sometimes he uses the ointment diluted with an equal or double part of benzoated lard. It is somewhat remarkable that the ointment does not appear to irritate the skin of the penis so much as it does that of other parts of the body, and he has never had to discontinue it for this cause. What suggested it to him was the plan adopted by the late Sir Benjamin Brodie for the mercurial treatment of infants, by wrapping a flannel bandage smeared with blue ointment round the arm or thigh, and renewing it once or twice daily.

Syphilitic Eruptions.—In private practice it is very desirable to effect as speedy a cure as possible of the tell-tale eruptions on the face, wrists, neck, and other visible surfaces, since their probably syphilitic character may be guessed by friends, more especially those who have themselves gone through the same ordeal. In the Lock Hospital there was an ointment used for the erythematous, papular, and scaly eruptions, which, on account of its rapidly curative effects, used to be called by the patients "the magic cream." Its composition was as follows: one part of ammoniate of mercury and three parts of oxide of zinc, mixed and rubbed into a fine powder, with sufficient glycerin and lard to make a stiff cream; a few drops of olive oil facilitate the mixture of all these. It is really astonishing how a few applications of this will make a very perceptible rash disappear in a few days. A ready method of preparing the above is by mixing one part of ammoniated mercury ointment with three parts of zinc ointment, each being fresh, and adding a little glycerin.

Mercurial Vapor Baths.—The value of these as an alternative to other modes of mercurial treatment, or even in preference to them in some cases, is generally admitted. The author has found them especially useful in some of the more obstinate forms of secondary syphilitic eruptions, especially those of a scaly character. In the Lock Hospital there were vapor baths in both the male and female wards, calomel being the mercurial used; and these baths were in frequent use, the patients taking to them very kindly.

Ulcerated Throat and Tongue.—Mr. Lowndes has great faith in the chlorate of potassium as a local application for these very troublesome forms of syphilis, and in obstinate cases the nitrate of silver or perchloride of mercury; the former solid or in strong solution, the latter in solution, the strength being from two to four grains in eight ounces of water. Iodoform combined with starch, in equal proportions, blown on to the affected surface with an insufflator, is a most excellent application in several cases incurable by ordinary treatment. Patients bear it very well, and do not complain of any disagreeable effects. Where there is much fetor, chlorinate of sodium, in the proportion of half an ounce

of the liquor to eight ounces of water, makes an excellent gargle.

Administration of Iodide of Potassium.—Married women especially suffered severely from the remote effects of having been infected by their husbands; having also, partly from ignorance and partly from neglect, been improperly treated at first; and the disease, besides being thus allowed to assume formidable proportions, had been also aggravated by poverty and other unfavorable surroundings. Iodide of potassium is too valuable a remedy to be withheld, but it has to be administered very cautiously. The author has found that the addition of acetate of potassium, in doses of fifteen grains, enabled the iodide to be borne much better than by itself. In some cases doses containing as much as sixty grains have been given; but generally from ten to twenty or thirty grains, twice or thrice daily, were enough. Another mode of administration was to give alternate doses of the iodide with iodide of iron; this was found very serviceable in debilitated patients. It is remarkable that the large doses were not followed by coryza, as the smaller doses, such as from three to five grains, invariably were.

Gonorrhœa and Gleet; Specifics.—Thirty years ago the usual treatment of gonorrhœa was to commence with an antiacid mixture: liq. potassæ, two drachms; tinct. hyoscyam., two drachms; spirit. æth. nit., a drachm and a half; aq. camph., eight ounces; an eighth part to be taken three or four times a day. This was followed by the copaiba paste, made as follows: pulv. cubeb., an ounce and a half; bals. copaib., half an ounce; ext. hyoscyam. and camph., of each half a drachm; theriacæ, q.s. The dose was a piece the size of a nut (filbert) three or four times a day. Mr. Lowndes finds that this treatment holds its own up to the present day, and in spite of all the various additional modes which have been suggested since; he has seldom found it disagree with patients, and even then a second trial with a smaller dose was more successful. On the other hand, he has been much disappointed with the oil of sandalwood, both as to its efficacy in reducing the inflammation and discharge, and also in its nauseating effects upon patients, even when administered in capsules. He has given every preparation of this oil a fair trial, and his experience is that the old copaiba and cubebs paste is the best specific for the acute stage of gonorrhœa (all the other circumstances being favorable to its administration), and in his hands it has also been found useful in obstinate cases of gleet.

Injections.—Chloride of zinc is the salt which is most useful for injections, beginning with a quarter of a grain to the ounce, and increasing this, if necessary, to half a grain, but never stronger than this. Occasionally it may be changed for the sulpho-carbolate of zinc, two grains to the ounce. The addition of a small quantity of tincture of iodine to the chloride seems to increase its effect. It is necessary to give the most minute directions to patients as to the manner in which injections should be used, as otherwise they will only irritate the bladder and do more harm than good. The author prefers a ball syringe, capable of holding half an ounce, with a leather nozzle; if the patient is directed to hold the penis close to the abdomen with the first finger and thumb of the left hand, so as to prevent the injection going past that point, and to syringe gently with the right hand, this will obviate any tendency to irritation of the bladder. Used every four hours, the chloride will reduce a very copious discharge in the course of a few days to a comparatively trifling one, and lead, if persevered with, to a perfect cure.

BROMIDE OF ARSENIC IN PSORIASIS VULGARIS.

In the *Rüsskaia Meditzina*, No. 48, 1887, p. 790, Dr. J. Ilïïn, of Warsaw, writes that in two obstinate cases of psoriasis vulgaris he has employed Professor Corbett's method of treatment, and obtained most brilliant results. The method consists in the internal use of a solution of bromide of arsenic (one grain) in alcohol (two ounces) with simple syrup (eight ounces), the dose being a teaspoonful, taken two or three times daily (after meals). One of his patients was a medical assistant, aged 27, who had suffered from intense psoriasis (of his back and limbs) since his childhood, in spite of the use of Fowler's solution, ointments with sulphur and tar, mineral baths, etc. The administration of bromide of arsenic brought about, in the space of a fortnight, a profuse shedding of scales, disappearance of deep bleeding fissures, etc., a complete and permanent cure ensuing shortly afterwards. Another case is that of a soldier, aged 22, who when first seen by Dr. Ilïïn (in the seventeenth month of the affection) was found to be covered literally from head to foot with dry, shining, white, fissured, and bleeding scaly patches, partly isolated, partly forming large and thick layers. On gently removing a scale there could be seen a surface studded

with bleeding points. The patient suffered from loss of appetite and sleep, was despondent, and generally felt very ill. He feared to move a limb, since every movement gave rise to fresh painful and bleeding fissures. A previous course of treatment by iodide of potassium and Fowler's solution had failed to afford the slightest relief. As in the former case, the use of bromide of arsenic was followed in a fortnight by a strikingly profuse desquamation, a rapid healing of fissures, and, shortly after, by a complete restoration to health. The only trace left by the affection was (in both of the cases) a brown discoloration at the spots once affected.—*London Medical Recorder*, June 20, 1888.

MERCURIAL OINTMENT.

Numerous as are the methods that have been suggested for hastening the extinction of the mercury in the preparation of mercurial ointment, one more has been put forward by M. JACQUEMAIRE (*Journ. Pharm. Chim.*, May, 1888, p. 513). It is based upon the use of a substance having some affinity for both the mercury and the fat, a condition that is fulfilled by either potassium or sodium, the former being preferred. 1 part of potassium to 100 parts of mercury is found by M. Jacquemaire to be sufficient, and he maintains that this quantity does not materially affect the final product, the mercury not being modified, while the partial saponification of the lard is insignificant. The mercury is first warmed to drive off traces of water and the potassium is added in small fragments. A slight crepitation shows that combination has taken place, and the mass is stirred with a glass rod to diffuse the resulting amalgam equally. The metallic mixture is then added to the fat and the whole beaten vigorously. The extinction is said to be perfect in ten minutes.—*Pharmaceutical Journ. and Trans.*, June 30, 1888.

THE USE OF THALLIN IN GONORRHŒA.

In the *Journal of Cutaneous and Genito-Urinary Diseases*, DR. GEORGE E. BREWER states that he made a number of experiments to test the value of sulphate of thallin in acute uncomplicated gonorrhœa. No benefit whatever followed injections of a two-per-cent. solution. The thallin bougies seemed in some cases to lessen the amount of discharge to a very considerable extent. This, however, was not permanent, as the discharge would reappear whenever the bougies were omitted, even after their long-continued use. During their employment, moreover, the *ardor urinæ* was greatly increased, and frequency in micturition occurred in nearly one-half the cases.

The partial success of thallin employed in the form of soluble bougies led him to attempt the use of bichloride of mercury in the same manner. A number of bougies containing this agent in the proportion of $\frac{1}{10,000}$ and $\frac{1}{20,000}$, were prepared. In all cases so treated there occurred a marked diminution in the amount of discharge, but the pain attending their use was so severe, and the vesical irritation so great, that their employment was abandoned.

Experiments were also made by injections with subiodide of bismuth suspended in glycerin and water; with nitrate of silver two grains to a pint of lime-water; with strong solutions of bicarbonate of sodium; with zinc sulphate and zinc acetate. No apparent benefit followed the use of these agents in acute specific cases, although their value in non-specific and chronic cases was often strikingly apparent.

Internal treatment was employed in about fifty cases. Large doses of potassium acetate, sufficient to render the urine alkaline, allayed the pain on urination, but produced no noticeable effect upon the course of the disease. Powdered cubebs, in doses of one teaspoonful every two hours, occasionally succeeded in checking the urethral discharge within twenty-four hours, but it reappeared whenever the medicine was omitted, and in many cases was continued for many weeks without producing any permanent result.

SIMILARITY OF BARIUM TO DIGITALIS.

Salts of barium, though they have been occasionally employed therapeutically, have never been very generally recognized as really useful therapeutic agents either in this country or abroad,—partly, perhaps, from a want of knowledge as to their effects both on physiological and pathological conditions. This knowledge DR. A. BARY, of Dorpat, has recently endeavored to supply, to some extent at least, by making a large number of investigations on the action of barium salts on animals, as well as by collecting recorded cases of the therapeutical employment of the drug or its accidental effects as a toxic agent in the human subject. The salt he mainly used was

the chloride, a substance with which every one is perfectly familiar in the laboratory, if not in the dispensary. The chief action of barium appears to be on the heart, showing great similarity to the action of digitalis, and somewhat less to that of physostigmine. Thus it was found, by experiments on frogs, that in small doses barium increased the action of the heart-muscle, and in large doses set up peristaltic movements, arresting the heart finally in systole, this arrest in systole being a tetanic spasm of the heart-muscle, and being capable of being brought to an end by agents which paralyze muscles and by mechanical distention by fluid pressure, but not by the electric current or by atropine. In very acute poisoning, either by large doses or by the direct application of the chloride of barium to the heart, the frog was found, even after the heart had stopped, to be capable of jumping. Again, the isolated apex was caused to beat by barium, being finally arrested in systole. The arrest caused by muscarine and chloral was brought to an end by using this salt. It was found that arrest in diastole could not be produced under its action by stimulation of the vagus or of the sinus venosus. The effects of barium on the arrest caused by muscarine, and the want of result from irritating the vagus, were found not to be due to any paralyzing action of the salt on the vagus. The foregoing effects are as nearly as possible identical with those produced by digitalis, differing also only in a slight degree from those of physostigmine. In warm-blooded animals barium in small doses slows the pulse independently of the inhibitory apparatus; in large doses it first accelerates the pulse, probably by stimulating the accelerating nerve, and finally slows it, in consequence of weakness of the heart. The blood-pressure is greatly increased by barium. Like pilocarpine, barium increases in a marked manner the secretion of saliva, but only when it is injected into the veins, this activity being immediately checked by atropin, differing in this latter respect from physostigmine. In view of the considerable contraction of the vessels caused by chloride of barium, Professor Kobert has recently made some trials of its use in cases of dilated cutaneous veins, employing it in the form of ointment. The cases were one of caput medusæ following renal tumor, and a case of long-standing dilatation of the veins of the inner aspect of the thigh in a patient with cardiac disease. No beneficial effect was obtained. It is, however, probable that by extended observations on physiological principles some valuable therapeutical uses may be found for barium.—*The Lancet*, June 30, 1888.

THE THERAPEUTIC ACTION OF MUCILAGINOUS SEEDS OR GRAINS.

In the *Journal de Mèdicine de Paris* of May 20, 1888, M. LANGLEBERT reports the results of his investigations made in the laboratory of the Faculty of Medicine, under the direction of the late Professor Vulpian, as to the results of internal administration of the mucilaginous seeds most ordinarily employed in therapeutics. His investigations included a study of the flax-seed, sesame, and the psyllium plantago. These three seeds are rich in oily and mucilaginous principles, and are often prescribed in the treatment of various gastric and intestinal troubles, principally on account of their mucilagenous elements. The formation of mucilage in seeds is due to the action of water on the superficial phytocysts of the grain. According to Trecul, it is not always the product of an alteration of the cellular membranes or of the starch, but is often a physiological element, like cellulose or starch, constituted of special cells which have their special mode of vegetation, and which form concentric layers. The mucilaginous phytocysts may be isolated, but they also may be arranged in series, and if in this case they become liquefied they form spontaneously true gummy canals. In the flax and psyllium a superficient layer of phytocysts, which covers the grain, thickens on contact with water, each of the phytocysts swelling considerably, without at first changing either in form or consistency, while the walls gradually thicken and then soften. As the water penetrates them they burst and gradually dissolve. Their fragments thus modified constitute a viscid mass of mucilage, in which the fragments of the primitive wall of the phytocysts may be for some time recognized.

In the study of the flax, the author's first aim was to determine the way these grains behave in the presence of water, varying the degree of temperature, the proportions, and duration of contact, and finally repeating these experiments with the fluids with which these seeds would come in contact in the economy. He found that water of the ordinary temperature had no appreciable action on the flax-seed, and even after a very long contact any result was scarcely determinable. If the temperature of the water is elevated,

the action on the flax-seed is more marked, leading only to a swelling of the grains, of which the episperm becomes detached, and to a transudation of a small quantity of mucilage leading to a slight brownish coloration of the liquid.

The seeds of the sesame placed in the same conditions furnish about similar results. In the case of the psyllium plantago the modifications are much more rapid, even with water, and lead to the production of a considerable quantity of mucilage, and to the swelling of the seeds to at least four times their ordinary volume without any change of shape or rupture of the grain. The seeds of the flax, sesame, and psyllium were then subjected to the action of the saliva of the dog and man from twelve to twenty-four hours, the results being much more marked in the case of the dog's saliva than with that of the man. Compared with the action of water, the swelling of the seeds is more marked, and a much larger quantity of mucilage is developed, without any external modifications of the shape of the seeds,—the results being more marked in the case of the psyllium than with the flax, and in the latter than the sesame. Experiments were then made as to the way in which the seeds behaved when placed in contact with gastric juice, the conditions, as nearly as possible, being approached to those which occur in digestion. Contrary to all expectation, the results were less marked than with saliva, or even with water. The flax-seeds, whatever the temperature, the proportion to the gastric juice, and the duration of contact, were always swollen and the exterior layers simply softened, so that the seeds might be readily crushed within the fingers, but there was no indication of any digestion of the seeds by the gastric juice. The seeds of the psyllium, on the other hand, were softened, swollen, and surrounded by a layer of mucilage which indicated partial digestion. In the case of the sesame the results were similar to those obtained with flax.

It thus would appear that on leaving the stomach these grains reached the small intestine well prepared to be submitted to an emulsive action, since they are softened and almost separated from their exterior envelope, while the kernel, free from this expansion, readily allows the oil to escape, and so be emulsified by the intestinal digestive juices. Thus it would appear that, administered internally as a remedy, the seeds of the flax and the psyllium fill a double rôle.

In the stomach they act mechanically to facilitate the division of the alimentary mass and excite the secretion of the gastric juice without affecting its digestive power, while the modifications to which they are subjected in the intestine, as a consequence of the emulsification of their oily constituents, give to them a considerable degree of laxative power. Studied comparatively, these transformations are much more marked in the seeds of the psyllium than in the flax or sesame, and the author would therefore advise the employment of the psyllium seeds rather than of the others.

Further, they have a much less volume and are much more rapidly and completely acted on by different liquids; hence, they must be more readily absorbed. The psyllium plantago, whose seeds are thus recommended, is widely distributed throughout the Mediterranean region. As yet it has been but little employed in therapeutics, but the author's studies would seem to warrant a further study of its medicinal properties. No attempt apparently has been made to determine whether this seed possesses any action on the kidneys.

THE TREATMENT OF BRONCHO-PNEUMONIA IN CHILDREN BY THE APPLICATION OF ICE.

Dr. Angel Money urges, in the *Lancet* for June 2, 1888, the more general adaptation of the use of ice-bags in the treatment of broncho-pneumonia. He writes that he has now treated in this way many cases of severe broncho-pneumonia in children and in infants with general success, no matter what might have been the cause of the disease. He has used it with success in cases of broncho-pneumonia, secondary to tracheotomy, and even with more favorable results when it occurs as a complication of influenza and measles. The smaller the child the more marked are its effects. In very small infants under one year of age the ice-bag may be placed on the head, the hair having previously been thinned and shortened if necessary. The treatment to be successful must be carried out with a will and systematically. As a general rule, the rectal temperature affords the best guide to the application of cold, and those acquainted with broncho-pneumonia well know the highly marked remittent or almost intermittent character of these affections. Ice-bags have the draw-back that they often give rise to a little wetting of the child, but this has not, in the writer's

experience, proved injurious to the patient. Leiter's tubes have been tried, and have some advantages, being especially valuable when an intelligent nurse is in attendance. The condensation of moisture caused by the cold is of course inevitable, but this wetting may be rendered harmless by covering the ice-bag or Leiter's tubing with a layer of Hartmann's wood wool or the compressed moss sphagnum. In severe cases, where a rapid effect is required, two ice-bags have been placed on the head, and one over the chief seat of consolidation in the lungs. With a little management it is not difficult to keep these in place; certainly not when the neuro-muscular prostration is marked, as it almost always is in severe cases. The chief merits of this treatment consist in the maintenance of the strength, not only of the heart, but also of the respiratory centres and of the nervous and muscular systems. Although otitis media occasionally occurred, yet this has not been more frequent than in cases treated without cold. Albuminuria is not rendered worse by the cold, nor have any cases of hæmaturia been observed. The urine has, at some trouble, been specially collected and tested in small infants. The duration of the disease is, on the whole, shortened. Convalescence is almost invariably rendered more rapid, doubtless because of the conservation of the child's energy.

It is superfluous to assert that ice does not merely act by stealing heat; its action is almost exclusively sedative. Physiologists would aver that it increased inhibition, and in that way made wrong right; because disease simply lowers resistance in the vital processes, and curative measures raise it. Ice influences different organs differently, and this is most noticeable in the various parts of the nervous system. Its action on the cortex of the brain is, perhaps, most evident in the production of sleep, restless movements rapidly subsiding if the cold be efficiently applied; probably, therefore, the whole system of motor centres and sensory centres is soothed, because morbid sensations and morbid motions tend to cease. On the heart and circulation the influence is also decided, but this influence is probably exercised directly and indirectly; for not only does the cold directly quiet the heart and steady the circulation, but the calming of the nervous system also acts indirectly in the same direction. The respiratory centres are similarly beneficially affected. The heat-regulating apparatus manifests most clearly the same beneficent action, and the temperature chart shows a similar harmonious effect. It is curious to observe the almost immediate cooling of the whole surface of the body soon after the application of ice to any part, this cooling effect being perhaps best marked when the ice is applied to the head; the hands, previously red and hot, become cool and slightly blue. The change is decidedly favorable, notwithstanding the supervention of the signs of feeble circulation in the exposed parts of the skin. Vomiting and diarrhœa, alone or in combination, may require treatment in the cases under consideration; the cold method does not increase diarrhœa, and it certainly tends to stave off vomiting. The employment of cold does not obviate the necessity of using stimulants, either of the ordinary sort or such as act more especially on the heart and respiration. But cold renders them less necessary, and when they are required smaller doses are sufficient. There is, indeed, a saving of expenditure all round: the cost of the illness is lessened, and the illness costs the child less expenditure of reserve strength.

ARE IODIDE OF POTASSIUM AND THE CHLORATE OF POTASSIUM INCOMPATIBLE?

The iodide of potassium and the chlorate of potassium are generally regarded as incompatible, this view resting upon an experiment of Melsens stated in most works on materia medica. The iodide is supposed to become oxidized at the expense of the chlorate, so producing in the economy the iodate of potassium, which is eminently poisonous. MM. CHUCHE and DESGREZ state in the *Revue Gènerale de Clinique et de Thèrapeutique* for June 21, 1888, that they have studied this reaction, and have concluded that the iodide is not produced in the ordinary conditions of the absorption of these drugs. Their experiments consisted of three series. In the first they simply united the iodide and chlorate of potassium. In the other two they approached as nearly as possible the actual conditions in the body through acidulating a medium with lactic acid. In the first series, when the mixture was warmed to 35° or 37° C., no iodate of potassium was formed. In the other experiments, where the state of affairs in the body was imitated, the amount of iodate was only one-six-thousandth for equal solutions. These experiments repeated a number of dif-

ferent ways, according to the authors, warrant the conclusion that practically no iodate of potassium is formed by the union of iodide of potassium and chlorate of potassium, and that therefore these drugs may be administered simultaneously without danger.

THE PURGATIVE ACTION OF GLYCERIN ENEMATA.

The value of injections of glycerin as a purgative, before alluded to in the columns of the GAZETTE, has been confirmed by the report of one hundred and fifteen cases by G. REISINGER, in the *Prager Medicinische Wochenschrift* for May 30, 1888. Of the one hundred and fifteen injections, one hundred and one (or about eighty-seven per cent.) resulted in an evacuation of the bowels, frequently very abundant in amount, occasionally very scanty. The consistency of the evacuation varied from a true diarrhœic passage to one of high degree of solidity. The intervals elapsing after the injection, before the bowels were moved, varied in the majority of the cases between two minutes and a quarter of an hour, although in some cases two hours elapsed before any effect was evident. The cases in which these results were obtained were of the most varied pathological nature, and included the most varied forms of intestinal and gastric troubles, and, although the material at the author's disposal was very rich, he does not feel warranted in drawing a conclusion as to what pathological processes are refractory to this treatment.

In five cases in which this remedy was employed, a post-mortem examination, subsequently made, revealed no alteration in the mucous membrane of the rectum which could be attributed to the local action of the glycerin. It is evident that the action of glycerin on the rectum is not a purely mechanical one, since an injection of an equal amount of an albumen solution, or other purely indifferent substances, produced no effect whatever.

It would, therefore, appear that the explanation of the action of glycerin must be found in some direct chemical action of the glycerin on the rectal mucous membrane. That this action is not dependent upon the extraction of water from the mucous membrane by the glycerin is improbable, from the fact that concentrated solutions of sodium sulphate, brought in a similar manner into the rectum, either produce no effect or fall far behind glycerin in promptness. The only assumption remaining is that glycerin in some other way produces an active reflex intestinal peristalsis. From the author's results, it would appear that glycerin employed in the form of enemata, while not an absolutely infallible purgative, is so constant in its action, and so free from danger, that it must be regarded as a valuable addition to our armamentarium.

TREATMENT OF ECZEMA.

In the *Lancet* for June 2, 1888, DR. J. A. WETHERELL states that, having himself been a sufferer from recurrent chronic eczema for a number of years, he has naturally taken great interest in all pertaining to it, and believes that he has discovered a new method of treating the disease. The following is an abstract of his plan of treatment:

1. *Medical Treatment.*—(*a*) External. He dips pieces of lint, sufficient to surround the fingers separately, in pure liquor carbonis detergens, and applies them, surrounded by gutta-percha tissue, at bedtime. They are allowed to remain on all night. Considerable smarting is at first caused, but it soon disappears. On removing the lint in the morning the skin looks sodden, the former vesicles are often raised into small bullæ, which, however, ere long get absorbed and dry up. During the day the hand is left exposed to the open air, or, better still, kept gloved in thin kid. They are washed every third day with lanolin coal-tar soap. To render the skin more pliable and soft a little lanolin is rubbed in every morning. In the course of three or four days the upper hardened cuticle comes off, in some cases as a whole, in others in large flakes, leaving a clean smooth surface, healthier, with more tonicity in it, and not so subject to undergo the catarrhal multiplication so characteristic of eczema. When much redness or heat exists, or there is an acrid discharge, or the implicated surface is extensive, we may moderate the strength of the alcoholic solution of coal tar by mixing it with (1 to 10 or 20) cold water; or the alkaline bathing, to be presently mentioned, may be tried. If there are only a few vesicles, he has often touched them over with a little pure carbolic acid, so as to bring away a mere shell of epidermis of limited area.

Let us now briefly review a few of the other local methods adopted. As to ointments,—*e.g.*, of bismuth, zinc, etc.,—all are,

like the tar method of Hebra, simply disgusting. Even the lowest menial does not care to parade the streets with his fingers or hand bandaged up with so many white linen rags, to say nothing of the small amount of relief producible. Huile de cade or oleum rusci pyroligneum painted over the parts every day or two will soon dispel an ordinary case; but what about the, to most people, disgusting smell? The treatment verily is worse than the disease. Bathing with saline or alkaline waters, such as are found at Harrogate, Bath, etc., alternating or combined with the application of spirituous alkaline lotions, the writer has great faith in, especially where the disease is extensive or there is much exudation,—*e.g.*, in eczema rubrum,—or the case is intractable to other means. Watering-places and the seaside, however, are not always near; nor could the patient always afford to go to them. The various gelatin, collodion, or other impermeable coatings, he considers worthless.

(*b*) Internal. Drugs, as such, are not required. To speak of treating the gouty or rheumatic diathesis by colchicum, etc., is simply ridiculous. Such terms as these should, in Dr. Wetherell's opinion, be abolished, or applied only where actual attacks of gout or rheumatism exist or threaten. Should we not rather speak of such as "a constitution with a tendency to excessive formation of uric acid," or even as "uratic"? To give large doses of arsenic is sheer waste of material. Very small doses often dispel scaliness; but it should only be administered in the form of some mineral water, as La Bourboule, Woodhall, etc.

2. *Dietetic Medication.*—Avoid stimulating and indigestible substances, as pickles, tea, etc. In other words, the chief materials of diet should be lean meat, milk, or cocoa at breakfast, old bread, fresh vegetables (except starchy bodies, as potatoes); no pastry. Avoid all that disagrees, especially beer and malt liquors.

3. *General Indications.*—Cleanliness in everything is very essential; clothe and diet the patient according to the changing season; avoid all local irritants; take plenty of fresh air and exercise, and by these means alone regulate the bowels and other emunctories.

In spite of all rules, cases now and then occur which withstand all treatment, baffle every effort, and cling to the sufferer for a lifetime. Such must be attacked on general principles. The plan cannot be a stereotyped one.

HELLEBOREINE AS A LOCAL ANÆSTHETIC.

VENTURINI and GASPAIRINI (*Bulletin Général de Thérapeutique*, June 15, 1888) state that helleboreine is an anæsthetic, and more valuable than cocaine in ocular therapeutics. Their conclusions are that 3 or 4 drops of a solution of helleboreine, each drop containing about the one-hundredth of a grain, instilled into the conjunctival sac, produces complete corneal anæsthesia, without any irritation of the conjunctiva or cornea. This anæsthetic effect lasts half an hour, or a little longer, but may be prolonged for twenty-four hours or more, by combining it with small amounts of erythrophlæine, but, when combined with cocaine, the anæsthetic action disappears so rapidly as to not admit of the performance of any operation whatever on the eye. The anæsthetic effect produced by helleboreine leads to no variation in the intra-ocular pressure. It also produces local anæsthetic effects wherever injected subcutaneously, but, as it has a very powerful action on the heart, this mode of application should be either made with great care, or, better, not at all.

THE PROPERTIES OF PHOSPHINE.

At the meeting of the Société de Thérapeutique, held May 9, 1888, DR. DUJARDIN-BEAUMETZ related some experiments which he had made, in a search for a substitute for antipyrin and acetanilide, with a body belonging to the aromatic series,—the binitrate of diamidophenylacridine (*Gazette Hebdomadaire de Medicine et de Chirurgie*, June 1, 1888). This body is known in commerce under the name of phosphine, a reddish powder, whose solution in an alkaline fluid is phosphorescent. It is but slightly poisonous when administered into the stomach; but, on the other hand, is extremely dangerous when injected into the veins; 15 grains injected into the stomach of a rat were not fatal, while a much smaller dose produced instant death when introduced directly into a vein. In man, appreciable analgesic effects are produced by doses of 8 grains, but when the dose is increased to 15 grains, vomiting and severe gastric pain are produced. The presence of phosphine in the blood and in the urine may be recognized by means of the color which it communicates to white linen when slightly acidulated with sulphuric acid. Dujardin-Beaumetz has given phosphine in solution in a number of different vehicles and doses, but

the gastric complications which it has invariably produced have been so severe that he sees no therapeutic future for this substance. Although the name of phosphine has been unfortunately chosen, since it already serves to designate a group of phosphorized bodies, this is a matter of little importance, since the body should be abandoned as far as any medical employment is concerned.

TONIC EFFECTS OF LATHYRUS SATIVUS.

The plant called sometimes the "white vetch," the scientific name of which is *Lathyrus sativus*, has long been known to be capable of producing serious toxic symptoms both in the human subject and in cattle when used for a prolonged period as food. This condition, which is termed "lathyrismus," has recently been studied by DR. S. SUCHARD, who has collected a large number of cases which have been published from time to time, some of them as early as the seventeenth century. In the human subject the chief effects produced are on the muscles of the lower extremities, especially on those below the knee. Horses which have been fed on the plant for a considerable period drop while performing the lightest work, in consequence of paralysis of the hinder extremities, and in many cases death has followed from bilateral paralysis of the laryngeal recurrent nerves and consequent asphyxia. This laryngeal affection does not occur in the human subject, and death very rarely takes place. Cantani, of Naples, has reported a number of cases in which he examined the muscles very carefully, and noted that the adductors were far less affected than the abductors. The muscles of the face, neck, trunk, and upper extremities were not affected at all, only those of the lower extremities. The cutaneous sensibility was not even affected even in the legs, and there was no retardation of the perception of an irritant; the reflexes also were good. The descending galvanic current produced slight contractions, but only when the circuit was closed. These contractions were weaker on the right side than on the left, and weaker also in the flexors than in the extensors. With the ascending current no contractions were obtained either on closing or on opening the circuit. A fragment of muscle excised and examined microscopically showed a diminution in the transverse markings, and several minute fat-globules were visible. In other cases incontinence of urine has been frequently noted, and in some reported by Giorgieri the tendon reflexes were increased. Proust believes that there is first produced a transverse myelitis, or a hemorrhage of the spinal cord, leading to secondary degeneration of the posterior columns. If so, this must be transitory, as patients generally get well, or, at all events, better, in time, and where post-mortem examinations have been obtained no indications of this spinal cord affection have been found. A. Strümpell believes that the lateral columns must be affected, the general symptoms corresponding very closely with those of the so-called spastic spinal paralysis. Several attempts have been made by Teilleux, Bourlier, and Astier to isolate the toxic principle. The last-named observer obtained from the seeds by Stats's method an alkaline volatile liquid body, which produced all the effects of the alkaloid itself. According to him, this, being volatile, is not present in preparations such as pressed cakes made at a high temperature, and these are found not to be poisonous. If, however, such cakes are prepared at low temperatures, they exhibit toxic properties,—a circumstance which is explained by their retention of the toxic principle, which, being volatile, is driven off when a high temperature is used.—*Lancet*, June 30, 1888.

PHYSIOLOGICAL ACTION OF ONOBAIO.—INTESTINAL MYASIS.

According to the Paris correspondent of the *British Med. Jour.*, June 30, 1888, MM. HENRY DE VARIGNY and PAUL LANGLOIS have investigated the physiological action of onobaio. The natives of Obock fix this poison, in the form of a small ball of hard, resinous, brown substance, behind the barbed point of their arrows. MM. Varigny and Langlois made a watery one-per-cent. solution with some of these balls. Injections of 5 or 10 milligrammes ($\frac{1}{12}$ or $\frac{1}{6}$ grain) of this solution kills rabbits and guinea-pigs very quickly. The animal is bent double; it leaps about, then falls over on its side making efforts to breathe, and dies with well-marked symptoms of asphyxia. If the animal is then opened, the heart will be found to be perfectly still. The ventricles no longer beat; a slight action is still observed in the auricles. The lungs are pale and anæmic. During life no disturbance of motor power or of sensibility is observed. 1 or 2 milligrammes were injected under the skin of a frog in which the heart had been laid bare. After a few minutes it was found that the

ventricle became contracted after auricular systole; this phenomenon increased; four or five minutes after the injection the quantity of blood entering the ventricle at each auricular systole became infinitesimal, and finally none passed in. The ventricle ceased to act; the auricles continued to contract for ten to fifty minutes. The following experiments were made upon dogs which had been subjected to the action of chloral and curare. In one case a large dose (1 centigramme ($\frac{1}{6}$ grain) of onobaio in one cubic centimetre of water, injected in about a minute) caused cardiac disturbance, without any definite respiratory symptoms. To avoid the direct action of the poison on the endocardium a solution of 1 milligramme ($\frac{1}{64}$ grain) in one cubic centimetre of water was injected into the veins at intervals. In the case of weak doses (4 milligrammes ($\frac{1}{16}$ grain) to thirteen pounds of the animal's weight) the breathing became much slower a minute or two after the injections. This phenomenon, which was not accompanied by notable cardiac disturbance, lasted one or two minutes, and then ceased. Larger doses (8 milligrammes ($\frac{1}{8}$ grain) to eleven pounds of weight, administered in four injections in about half an hour) quickened the breathing for a few instants. The breathing then became gradually slower, and at the end of two or three minutes entirely ceased. The heart continued to beat, but subsequently became slower, and finally ceased. In an experiment with 6 milligrammes ($\frac{1}{16}$ grain) to eleven pounds of the weight the cessation of the respiration did not arrest the action of the heart. Artificial respiration was practised; the heart continued to beat, and at the end of a few minutes the respiration became natural. Onobaio sometimes causes vomiting in animals which have not been previously brought under the influence of chloral.

Reviews.

A System of Obstetrics by American Authors. Edited by Barton Cooke Hirst, M.D., etc. Vol. I. Illustrated with colored plate and three hundred and nine engravings on wood.

Philadelphia: Lea Brothers & Co., 1888.

Here we are again! One more applicant for the professional reader's favor, one more "composite systematic treatise" on obstetrics for the student to buy as his text-book, the practitioner as his guide. There are so many guides, but luckily they all guide pretty much to the same place, showing about the same scenery on the way, and making the same remarks. While the market can stand it we suppose the readers ought not to grumble, but actually in this labored volume how much is there that is not as a whole contained in many preceding volumes of a similar sort? Originality is unlooked for, but novelty may be, or else why does the book live? It is all good. If we had no work on the subject, perhaps this one would do as well as any. Many of its articles are very ably written, some in new language, with phrases new to the eye, but the cold facts are the same old time-honored ones.

This Vol. I. contains "A History of Obstetrics," by Geo. J. Englemann, M.D., which will prove of interest rather to the curious student than to the active worker. It tells us about labor in the "primitive or intuitive epoch," both in ancient times and still surviving among savage tribes and the aboriginal inhabitants of many lands. In "the religious epoch" are Egypt, India, and other lands with histories. For the "progressive pre-anatomic epoch" are China and Japan, and Western Europe before modern medical science. "Scientific obstetrics" the author places between 1550 and 1888, and divides this period into a "period of development,—surgical period," reaching to 1800, and "the period of perfection,—physiological period," 1801 to 1888. Why he should have assumed that perfection has been reached we leave to him to explain. "The antiseptic period"—1870 to 1888—contains the statistics on which is based the claim for the triumph of the antiseptic system.

"The Physiology and Histology of Ovulation, Menstruation, and Fertilization,—the Development of the Embryo," is by H. Newell Martin, F.R.S., M.D., D.Sc., M.A., and gives us the last word of scientific research, along with many other words, oft heard before and repeated indefinitely in scores of volumes, illustrated with pretty much the same style of wood-cuts. Perhaps the best part of the article is that on the fertilization of the ovum. As we read it we see how the struggle for life begins even before the embryo begins, how the spermatozoids struggle, and how "many are called, but few chosen," how it is by no means the sly and subtle spermatozoid that gains the wished-for goal, since those who try to sidle in generally fail, while the bold, courageous male element, which takes a header, despising devious and oblique ways, succeeds, and fertilization is

accomplished. This article covers one hundred and thirty-two pages.

Dr. Barton Cooke Hirst, M.D., contributes "The Development of the Fœtus in the Different Months of Pregnancy." This is a very practical article, not only from the knowledge it imparts as to the age of any disputed ovum or fœtus, but from its very able discussion of the general subject of abortion, miscarriage, and premature labor. The "Physiology of Pregnancy" is by Wm. Wright Jaggard, A.M., M.D. This article contains excellent sections on the "diagnosis of pregnancy" and the "diagnosis of the time of pregnancy," of multiple pregnancy, of primiparity and multiparity, and the life or death of the fœtus, the relations of pregnancy to general diseases, and many other allied topics, which are all handled in a masterly manner.

"The Physiological and Clinical Phenomena of Natural Labor" is by Samuel C. Busey, M.D., LL.D., and discusses the general management of labor, care of the perineum, resuscitation of asphyxiated infants, and the care of feeble and premature infants.

"The Use of Anæsthetics in Labor" is by Dr. J. C. Reeve. This article gives us a full account of the history of obstetric anæsthesia, studies the different estimates of value placed upon ether, chloroform, chloral, bromide of ethyl, and other agents, and will give the reader reliable ground on which to go in deciding which agent to use. The method of administration is also discussed. The author of the article considers chloroform as superior to ether, and in this opinion he concurs with the majority as to the safety of chloroform; he considers ether as by no means so absolutely safe as American teaching has led us to believe. The editor appends a shorter article on "The Use of Ether in Obstetric Practice," giving some account of a method of administration not generally known, but very successful in the hands of those who have used it.

Dr. Theophilus Parvin contributes a very able chapter on "Anomalies of the Forces of Labor." This will be found of great interest, and will give the reader many new hints both as to the causes of delay and the means of removing them. This paper concludes the volume, which, if followed by others of equal interest and freshness, will cause the series to be welcomed by the profession as a real addition to the already abundant literature of the subject. E. W. W.

THE MECHANISM OF LABOR AND THE TREATMENT OF LABOR BASED ON THE MECHANISM. By R. A. F. Penrose, M.D., LL.D.

Such is the sententious title of Dr. Penrose's contribution to the American System of Obstetrics, and we are conscious of a queer sensation on beginning to read this chapter. It somehow, with the subtle power possessed by strange perfumes, brings back a host of recollections. The printed page fades away, and we seem sitting once more in the amphitheatre of the old university. Side by side with us sits the now eminent Catharticus, who nowadays sometimes nods distantly to us as we pass his correct equipage on the streets. Near us on the right is poor Pills, who strove so hard to succeed, and died exhausted long years ago, while all around us the old forms, whittled, stained, and worn, are filled with expectant students. The light, in long-strung beams of glorified dust, gilds the operating-table, arrayed with the instruments — the crania and pelvis—of the obstetrician. The blackboard is covered with cabalistic drawings, which are only pelvic diameters and axes of straits and fœtal heads. The air is filled with a hum of voices, and begins to grow noisy, when a hush falls quickly as the door beyond opens, and the new professor of obstetrics walks rapidly into the circle, with head erect, a sudden upward glance to right and left, and that almost defiant air which was soon to grow so familiar. Then began the first of a series of lectures, of a style quite new to us who had listened to the quiet and earnest, if sometimes monotonous, words of Dr. Hodge,—lectures some of which are surely embodied in the chapter before us. The exact words may be absent, but the spirit of the lecturer breathes in every sentence and paragraph, prompt, confident, always impressing the student with a sense of power to meet emergencies and conquer obstacles; all this and more is recalled by reading this chapter.

Steam and the telegraph can never travel forward so fast as memory backward. The old university, with its dinginess and decay, is gone. Many feet as ever hurry over what was once an apology for a campus, with its uneven brick and scrubby grass, but they tread the marble pavement of the post-office, and come and go on other errands than ours.

So the teaching of the lecturer will perchance be more enduring than the halls in which he labored, unless the American system be crushed too speedily by the too many systems, American and foreign, which the

press seems to be eructating like some awful educational volcano, till it bids fair to cover the green earth with its own sort of slag, ashes, and lava. While time and manners change, the mechanism of labor—nature's mechanism—changes not. The obstetric posture may vary, and the customs of the lying-in room yield to fashion, but the head descends into the pelvis in much the same way as it did in Eve's day. Cultivation and education may enlarge the size of the fœtal head, poverty and hard work may cramp and distort the mother's pelvis, but these act on limited numbers. The only change really possible in the mechanism is by its direction and modification by the mechanical ingenuity of man, seeing more clearly how the mechanism acts, and inventing better instruments to overcome its failures, and where interference is needed and the mechanism of nature fails, we may find with passing years a change of sentiment as to what is best to be done, a different estimate may be made of the relative value of maternal and fœtal life, and a different view taken as to which we should favor in our efforts. Craniotomy, for instance, is regarded differently by one decade than by another. The value of the child's life compared with the mother's has been rising of late, and operations have been devised to meet it, and at the same time antisepsis enters the question and diminishes the maternal risks.

It is just here, perhaps, that one might venture to criticise the author. Just in his unwillingness to submit the mother to long-continued efforts at instrumental delivery and his readiness to resort to craniotomy when many might stay his hand with a cautionary "too early," or "try another forceps," he would urge the student to the more fatal alternative. Take the whole question of the management of an occiput arrested by rotation into the sacral hollow, and let us see what Dr. Penrose says. These cases the author attacks immediately with "short, straight forceps," and attempts to force rotation, though at once he discouragingly says, "and probably it will fail." Then we are to try the forceps as tractors; presumably, though we are not told, the short, straight forceps are abandoned, and the author's favorite, Hodge's forceps, are to be used prudently, for he says, "Should a prudent application of the forceps fail,—and it constantly will fail,—then the forceps must be abandoned." To heighten the picture, and still further paralyze the arm of the novice, he speaks of violence and improper force, when "the forceps ceases to be a conservative instrument, and becomes a highly dangerous one, often as fatal to the child as a pair of crushing craniotomy forceps, and much more dangerous than these to the mother,"—language from which we decidedly dissent, for many forceps are made incapable of crushing the head while in the position he has under consideration, and the "crushing craniotomy forceps" have a special danger to the mother possessed by no others,—a danger due to the thing crushed, and the position its loosened and dislocated bones assume. In actual experience the mother can stand an immense amount of traction force, if only speedily applied and occupying but a short time, and come off with nothing worse than a torn perineum.

"The next procedure," then, "is embryotomy." Thus, we see how the student and practitioner, depending upon our author and following his advice, is driven, in occipito-posterior positions of difficulty, to craniotomy. All else is slighted, discouraged, and disparaged. The probability of spontaneous rotation forward is ignored; the efforts to force rotation are half-heartedly recommended. The horrors of strong traction are magnified manifold. To read this one would scarcely think that many children are delivered, after severe and often long-continued traction in this position, unharmed practically, and with their mothers uninjured. All the possibility of spontaneous rotation in the grasp of the wide forceps, all the advantages in these very cases of the traction forceps, are ignored, and the student is hedged in and driven along a path which leads only to craniotomy. We even find the opponents of unnecessary craniotomy spoken of as "men who have had absolutely no experience in the difficulties of labor," and the operation—embryotomy—lauded as "a highly conservative and benign one," while the dangers of the operation to the mother are viewed through the diminishing-glass. "Embryotomy prudently performed in these cases is not dangerous." We grant not as dangerous as in contracted pelvis, but how if performed imprudently? Is it as safe as an imprudent use of the forceps? "Resort immediately after failing with the forceps to embryotomy," says our author; but the forceps have been used so timidly under the author's cautions and warnings, so timidly, so feebly and fearfully by the disciple of our author, that they can scarcely be said to have tried their powers at all.

Very properly, a consultation is considered as absolutely indicated before this operation, but if the consultant does not agree with the attendant, then the danger should be stated to the patient and friends, and if they withhold consent, "instantly abandon the case," which is quite good advice in some cases, but in other circumstances easy to imagine would be merely a ready way of shirking unpleasant responsibility, and escaping from a difficult position without much honor.

PRACTICAL LESSONS IN NURSING. THE NURSING AND CARE OF THE NERVOUS AND INSANE. By Chas. K. Mills, M.D., etc.
Philadelphia: J. B. Lippincott Company, 1887.

These pages are, the author tells us, the substance of a course of lectures delivered at the Training School for Nurses of the Philadelphia Hospital and Woman's Hospital Training School for Nurses. The author believes his book to be, at the time of its publication, unique, in the fact that it is specially directed to the nursing of "functional or organic nervous troubles." The reader will find on every page hints of great value and facts of great interest. The management of victims of the alcohol and opium habits is specially dwelt on. The chapter on massage is very valuable, showing us what true massage is, and what is false and useless. The application of electricity is practically described, and lastly, the nursing and care of the insane.

While giving the attendants all needful advice, Dr. Mills is by no means inclined to go so far as many authors. He believes that the physician should know somewhat more than the nurse. He says wisely, "While it is an advantage . . . for non-medical attendants upon the sick to have some acquaintanceship with anatomy and physiology, or other branches of medical science, the amount of knowledge of this description absolutely requisite is limited."

"Diseases of the nervous system cover an enormous field," and Dr. Mills has made a rough estimate of the relative frequency of the different nervous diseases and their relative demands upon the nurse, and gives us four great divisions. These different groups require somewhat different natural and acquired gifts upon the part of the nurse. Tact the author considers as an indispensable requisite to a good nurse. The book is full of epigrammatic sayings: "A domineering nurse will not succeed, while a decided one will have the best chance of success;" "A good reader may interest patients of a certain class: a bad one may torture them;" "With a constitutionally talkative nurse it is worse than useless to attempt to correct the habit;" "The conceited nurse is a sore burden, but the nurse who is too humble is almost as bad." These short sentences will give some idea of the writer's style, which is peculiar in its quiet excellence. We have not for a long time seen a more readable book, and the author is by no means to be understood as willing to limit the usefulness of a nurse to one class of cases." "I regard it," he says, "as a high quality in a nurse to be willing to turn to any form of nursing in her general line in an emergency."

To limit the nurse in her newly-acquired knowledge is sometimes necessary. The author cautions nurses "not to make the diagnosis of hysteria;" in fact, it is better for the nurse "never to use the word 'hysteria' at all." To aid the nurse in emergency the author gives a very carefully written description of the salient points of difference in epilepsy,—hystero-epilepsy, apoplexy, sunstroke, or heat prostration, and drunkenness,—with advice as to what to do; in fact, it is possible that he goes quite far enough, since the physician has very little knowledge in these diagnoses beyond what is here imparted to the nurse herself. Taking the case of uræmic coma, while a nurse who studies these pages with care may make a diagnosis, yet, to be accurate and reliable, her general training would require to be of a very high order; but probably, if entering upon the subject at all, it is better to be thorough; and, in fact, truth demands thoroughness, and the author has succeeded in expressing himself in wonderfully clear and simple sentences. His details are carefully looked to, and nothing seems omitted which can render the nurse more useful and helpful. In the matter of the management of bed-sores these explicit directions are of the greatest value, and a study of this portion of the book will be of great use to many who aspire to a much higher title than that of nurse; and throughout the book one comes across every little while sentences which, for their sententious brevity and their classical expression, deserve to be remembered. "Of what avail will be the drowsy syrup, or the soothing draught, if, after its administration, the nurse becomes noisy and excites the patient?"

Perhaps the chapter on massage will attract

the most professional readers. Here, again, the author's peculiar and enticing style makes itself evident. Very soon we read: "A nurse to-night cannot be a masseur or a masseuse to-morrow simply by thinking over the matter." The author has observed and studied the methods of different operators, and finds that they differ very much. How they differ, and which method is most scientific and valuable, the author endeavors to tell us. In fact, he gives a very valuable and plain account of the whole procedure, with "hints and suggestions as to proper and improper methods." As an addition to the subject we have a good account of the use of surface thermometers.

Chapter iii. gives us a very good account of the medical uses of electricity from a nurse's stand-point, and is well illustrated. Chapter iv. deals with "the nursing and care of the insane." In this chapter a general knowledge of the different forms of insanity is inculcated. The author by no means intends to make his nurses expert alienists. He says, "When it is remembered that even educated physicians . . . have considerable difficulty in separating the different forms of insanity, it . . . would be folly for an individual who is not medically educated to try in a little brief instruction to obtain such information." But, the diagnosis being made, the nurse should be somewhat familiar with the danger attending the various forms of insanity. Thus, "Accidents are likely to occur among cases of paretic dementia," for reasons which the author gives. A certain amount of knowledge should be possessed by the nurse concerning "delusions, hallucinations, illusions, etc., to enable them to understand the mental condition of the patient." Of the necessity for "the protection of the insane from the commission of suicide," the author speaks very strongly; and, in fact, every detail is carefully and minutely described, the author concluding his work with a quotation on "the good attendant," from the writings of Dr. Ray, whom he describes as "the greatest of American alienists." The reader will soon be convinced by a perusal of the book that, while very simple and unassuming in its appearance, it is a work of a very high order, and of the greatest value to those physicians, as well as nurses, who are brought into contact with the insane. Its principles are sound, its advice is always good, and its study of the subject is brief but thorough.

E. W. W.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK FOR 1887. Published by the Society.

Syracuse Journal Company, Printers and Binders.

This volume contains much readable matter. The president's address, by Dr. W. S. Ely, of Rochester, treats of "The Physician in Science and Letters," and makes quite a favorable showing for the profession. Locke, Hartley, Erasmus Darwin, Schelling, Cabanis, in philosophy; Goldsmith, Sir Thomas Browne, Smollett, Dr. John Brown, of Edinburgh, and many others, in literature; in poetry, Keats, Crabbe, Akenside; in science, where the study of medicine and its allied branches opens what is really one of its very gateways to the student, the names are legion; while in travel and research, Dr. Kane, Mungo Park, and David Livingstone are only a few of the many. The address is short and well written.

The Merritt cash prize essay is on the "Physiological Condition and Sanitary Requirements of School Life and School-Houses,"—a rather involved title to a very thorough and exhaustive consideration of the subject by Dr. A. N. Bell, of Brooklyn.

Dr. Fordyce Barker gives a paper on "Is the Danger from Post-partum Hemorrhage increased by the Use of Anæsthetics during Parturition?" Dr. Barker in this paper, which has been extensively quoted, and is familiar now to many readers, gives the preference to chloroform over all other anæsthetics in obstetric practice. He has used no other since 1850. Among the reasons for this preference, one is stated which is alone, if no others existed, worthy of consideration. Chloroform is by no one accused of being so dangerous where disease of the kidneys exists as ether. Besides this, it is more agreeable, more rapid; excitement is generally less; its effects can be more readily regulated. Dr. Barker concludes the paper with the statement that in his private practice he has never had but one case of post-partum hemorrhage, and in that no anæsthetics were employed.

The discussion following the paper is of great interest.

Dr. Pomeroy gives a paper on "Cases exhibiting the Results of Multiple Paracentesis of the Drum Membrane on the Hearing in Chronic Aural Catarrh." "Is Modern Midwifery Meddlesome?" by Dr. David Little, of Rochester, goes over what might be expected from the title, shows how diverse and opposite are the dicta of different masters of the art, and would inculcate a general do-nothing

and let-alone treatment. Against all that can be said, we would say that the diminishing mortality in delivery, where it is treated on the scientific meddlesome plan,—meddling always to some purpose,—for a good reason, and guarding the mother by antisepsis, shows that we have something better than the author's plan of never interfering. He who interferes at least knows what is going on, which is more than can be said for the physician who, without any digital examination, for fear of conveying infection, goes to sleep, and lets things take their course. Dr. Jno. O. Roe, of Rochester, writes on "The Deformity termed 'Pug-nose,' and its Correction by a Simple Operation." This operation the author describes, and gives the inevitable wood-cut, with views before and after.

Drs. Ringer and Buxton contribute a paper on "The Influence of Small Quantities of Sodium, Calcium, and Potassium Salts upon the Heart and Skeletal Muscles of the Tortoise," which is, doubtless, very useful and improving to the mind.

"Primary Nephritis in Infancy," by Dr. L. Emmett Holt, is a very excellent paper, as is also that of Dr. Otis on "Some Points in the Treatment of Deep Urethral Stricture." Mr. Lawson Tait has a paper on the "Results of Unilateral Removal of the Uterus Appendages." Dr. Sowyer writes on "Intubation of the Larynx;" on which subject also Dr. Edward L. Partridge gives us "Remarks," and Dr. Wm. Hailles, Jr., reports two cases.

Dr. A. Waller Suiter writes a paper on the "Medico-Legal Aspect of the Druse Case," which is illustrated by a very interesting photograph. Besides these there are many short papers, and some larger ones of equal interest, which space forbids us to mention. The volume, as a whole, well repays perusal.

E. W. W.

THE HEALING OF ARTERIES AFTER LIGATURE IN MEN AND ANIMALS. By J. Collins Warren, M.D., Assistant Professor of Surgery, Harvard University, etc.
New York: Wm. Wood & Co., 1886.

The author has endeavored by carefully repeating the experimental observations of others, and by new experiments on his own part, to solve the question of the book finally. How far he has succeeded, how far his observations confirm or overthrow the previous work of others, the reader will see. The work at least has been carefully and conscientiously done, and, in his own words, "the attempt has been made here to study the question from a more comprehensive stand-point, to observe not only the behavior of the various tissues concerned in the process of repair, but also the different phases through which the vessel passes from the moment of ligature until the condition is reached after which no further change occurs."

The author finds that the duration of the process of repair after ligature "greatly exceeds that usually attributed to it." For large vessels it may be said to range from three to six months." The nature of the process is complicated, and of necessity, from the structures involved, slow. There are no facts in the work and materials of our author to warrant any conclusion in favor of union by first intention ever actually occurring.

The nature of the cicatrix observed by the author "differs essentially from that usually ascribed to it." While almost all observers have excluded the muscular coat of the vessel from any participation in the process, the author seems sure that "the muscular cell is a prominent and essential feature in the arterial cicatrix." The book is so thorough that we are sure the experiments are also. The plates are numerous, the bibliography is full, and the index is satisfactory. E. W. W.

RECTAL AND ANAL SURGERY, WITH A DESCRIPTION OF THE SECRET METHODS OF THE ITINERANTS. By Edmund Andrews, M.D., LL.D., etc., and Ewyllys Andrews, M.D. With original illustrations.
Chicago: W. T. Keener, 1888.

This a good book in its way, written in a somewhat free and colloquial style, with a Western air of fresh breezes, and seems mostly occupied with the annihilation of the "itinerants," who seem to have vexed the soul of the authors in many ways. As an exposure of the itinerants it is quite a masterly work, and as a guide to practice in rectal matters possesses an intrinsic value besides. The language of the book is sometimes vague, and often far from classical. In the matter of illumination the author tells us "that even a short piece of candle will furnish a light for external inspection if held close to the parts," from which we infer that the Western "parts" are generally incandescent. "An electric light is splendid," but a magnesium light is evidently the acme of all lights. The author gives us lists for small and large cases of instruments for rectal operations, and says, "Even the smaller case is much better than those possessed by the itinerants." The author thinks that hemorrhoidal tumors

"have a remarkable erectile power not mentioned by most authors," and utilizes it for purposes of examination in the treatment of anal fistulæ. Dr. Andrews describes the method of the "itinerants," which, he says, "consists in the injection of some vigorous antiseptic." No disciple of Lister could fight it out on that line more persistently. Altogether, the book is quite interesting and worth reading, if only for the "itinerants."

E. W. W.

Correspondence.

PARIS.

(From our Special Correspondent.)

A rapid process for detecting *tuberculous bacilli* has been proposed by Drs. Pittion and G. Roux, of Lyons, which may prove useful in many cases. Three separate solutions are to be prepared beforehand: (*a*) Fuchsine, or magenta red, 10 grammes (2½ drachms); absolute alcohol, 100 grammes (25 drachms), by weight. (*b*) Ammonia, 3 grammes (45 grains); water, 100 grammes (25 drachms). (*c*) Alcohol, 50 grammes (12½ drachms); water, 30 grammes (7½ drachms); nitric acid, 20 grammes (5 drachms); aniline green, enough to saturate. To prepare the last mixture the green pigment should first be dissolved in the alcohol, next the water be added, and finally the acid. When the test is to be applied, 10 cubic centimetres (2½ fluid-drachms) of solution *b* should be taken, 1 cubic centimetre (15 minims) of solution *a* added to it, and the whole be heated till it begins to smoke. The glass slide bearing the sputa, properly dried, is now to be immersed into the mixture for about a minute, washed afterwards with an abundance of water, and lastly treated with two or three drops of solution *c*, which should not be left in contact longer than forty-five seconds. After another washing, the slide may be mounted with balsam as usual, and examined under the microscope. In this way less than three minutes are sufficient to secure a very satisfactory preparation distinctly showing pink-colored bacilli on a pale-green ground. Good results are also obtained by substituting gentian violet for magenta, and a weak solution of chrysoidine for aniline green, but in this case sulphuric must be used instead of nitric acid in solution *c*. The advantages claimed for the process now set forth are that a greater number of bacilli are dyed than with the older methods; the bacilli swell up under the action of the reagent, and thus appear larger and deeper-colored; and, lastly, the manipulations are very speedily effected.

The subject of *poisonous pigments* is one of general interest, as a paint of some sort must cover the house we live in, most objects that we handle, and especially children's toys, which have to be as gaudy as possible, and are sure to find their way into the darlings' mouths. Hence the necessity of some regulations respecting the nature of the pigments allowed to be employed on articles of common use. The Paris prefects of police, under the advice of the council of hygiene,—corresponding to the American boards of health,—have at various times issued orders in regard to the matter similar to the regulations adopted in most European countries. Not long since a new and rather more liberal view has been taken of pigments, which may be both useful and interesting to boards of health and physicians on your side of the Atlantic, especially owing to the stricter character of the definitions. By a recently issued order the following pigments shall, as heretofore, be prohibited: 1. Arsenical compounds; 2. Lead compounds; 3. Copper compounds; 4. Mercury compounds; 5. Barium salts soluble in weak acids, such as the carbonate and chromate. But—and now we come to the exceptions—vermilion and chrome yellow (lead chromate) shall be allowed when mixed with drying oils or varnish, and all varnishes containing lead oxide in combination shall be permitted. Rubber balloons, and stamped iron or tin toys, may be painted with white lead or vermilion, in oil or varnish, but all toys shall answer the following tests: (*a*) When left in contact for three hours with a two-per-cent. solution of hydrochloric acid, the liquor shall with sulphuretted hydrogen show no indication of a lead or mercury salt. (*b*) The colored coating shall stand rubbing with a wet cloth. (*c*) On burning, the pellicle shall give out the smell of oil or varnish. (*d*) The varnish or oil shall be insoluble in fifty-per-cent. alcohol. Toys used with the mouth, such as *mirlitons*, trumpets, etc., shall not have the benefit of the foregoing exemptions, but shall be subject to the general rules governing wrappers for alimentary substances. It is easy to see that Prefect Lozé has followed the advice of the expert chemists and physicians composing the council of hygiene.

On July 18 the French Senate granted a life pension of six thousand francs (twelve

hundred dollars) to Dr. Maillot, the introducer of quinine in therapeutics. His name is probably unknown to the younger members of the profession, and but few perhaps of the older remember it. Yet he was the first to put to practical use Pelletier and Caventou's chemical discovery. The febrifuge properties of cinchona were, of course, known long before, but Dr. Maillot was the first to dare administer the alkaloid; and it may here be added that the late John Milhan, a New York pharmacist, not long after brought to America a supply of sulphate of quinine, at a time when English physicians were afraid to touch it, and the American began to prescribe it in ½-grain doses. For that matter, the French were just as shy of the strange alkaloid, and Dr. Maillot had to fight long and hard before the profession would accept the new remedy. It was in 1834, at the Bona Hospital, that quinine was first employed against the deadly fevers of the Metidja plains, near Algiers. The treatment was, of course, thoroughly appreciated by the patients that it cured, but the opposition it met with is no less extraordinary than instructive. Suffice it to say, that while, on the one hand, the Duke of Orleans, Louis Philippe's son and heir-apparent, a man of learning and intelligence, called quinine rank poison, on the other, F. V. Raspail, the notorious demagogue, but a good chemist withal, denounced the alkaloid with no less acrimony in his popular medical publications. As we all know, quinine has overcome all opposition from princes as well as from anarchists. But it seems Dr. Maillot has not been so successful in the world, and, although he is at present the president of the army council of health, an addition to his pecuniary means will be as welcome as it is merited. The old gentleman being now eighty-six years of age, the French republic will not be much the poorer for this liberality.

Two instances of *morphine incompatibility* have recently been noticed in French papers. The first, although perhaps not altogether unknown, is all the more dangerous because almost unexpected. It is owing to the formation of an insoluble cyanide of morphine whenever a salt of the alkaloid is dissolved in bitter almond or cherry-laurel water. The precipitate forms gradually, after the potion has left the hands of the dispenser, and the patient is liable to take in the last portions of his medicine a poisonous dose of both morphine and prussic acid. As cherry-laurel water was not long since recommended for solutions of alkaloids because it protects them from microscopic growths, the caution is a timely one, not only as regards morphine, but perhaps other alkaloids also. Some five or six drops of muriatic acid to the ounce are said to prevent the formation of morphine cyanide, but it must be confessed the remedy is far from satisfactory in most cases, and quite inadmissible for hypodermic solutions. The other incompatibility of morphine is with the anisated spirit of ammonia of some continental pharmacopœias. No dispenser worthy of the name needs more than a passing allusion to the subject; but, strange to say, some physicians will keep on prescribing such mixtures.

An amusing case of *malingering* was the other day related by an army doctor. A soldier was suspected of feigning a cystitis, from which he claimed to be suffering severely. He had thus secured exemption from many irksome duties; but the surgeon mistrusted the man, partly because army doctors are naturally incredulous, partly because the appetite remained excellent, and chiefly because the patient always found some pretext for passing the bloody urine when no one was present. Once, however, he was compelled to officiate while the surgeon was watching him. The blood was there, sure enough, only with the last drops passing a most unnatural hissing noise was noticed, as if some gas were escaping from the bladder. Suspecting a trick more than ever, the doctor, at the next micturition, ordered a hospital nurse to draw with a catheter the water from the bladder direct, when lo! and behold! a beautiful specimen of normal healthy urine was obtained. Caught at last, the soldier confessed he had first dropped into his urine blood squeezed from his gums, and, when something more convincing became necessary, he had blown it himself into his bladder by means of a common grass stem. Hence that wonderful escape of gas observed before the final collapse of the deception.

Saccharin has met with a set-back in our part of Europe, its use having been prohibited in all substances intended for food, both in England and in France. In fact, it has been so far chiefly employed for adulterating purposes, champagne wines of German make, syrups, chocolates, etc., having been seized in which sugar was partly replaced by glucose seasoned with the new sweetening principle. The authorities have wisely decided that while saccharin may be very good for diabetics, or as an antiseptic medicament, its

use in common articles of food is a rank adulteration that should not be tolerated. Its place is on the pharmacist's shelf, to be prescribed by the physician, and not on the breakfast-table.

PARIS, July 20, 1888.

QUEBRACHO IN DYSPNŒA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—On page 491 of THERAPEUTIC GAZETTE (July number, 1888) I notice an article contributed by Dr. P. K. Taylor, of Wakefield, R. I., entitled "Quebracho in Dyspnœa," and giving cases relieved by quebracho. As I have recently been treating a case of tuberculosis in which there was distressing dyspnœa, I will give my experience.

The lady was a blonde about 18 years of age. Mother and two sisters had died from phthisis. I do not think I ever saw such difficult breathing; it almost amounted to asphyxia. I prescribed fld. ext. quebracho in 20-gtt. doses, to be repeated every two hours until relief occurred. She very rarely had to repeat this, the first dose giving prompt relief, and she would continue to breathe well for twenty-four hours without its repetition. The remedy acted charmingly in this case; but, of course, this case is not enough to base any claim for the remedy being anything like a specific in such troubles.

J. P. BAIRD, M.D.

GREENVILLE, TEXAS, July 26, 1888.

Notes and Queries.

ANTIFEBRIN.

Since Cahn and Hepp published the first account of antifebrin in 1886 above one hundred papers have appeared in various languages concerning it, and many additional facts have been recorded with regard to its physiological action and uses. Most of these have from time to time been referred to in the GAZETTE. The following review, taken from the *Medical Chronicle*, July, 1888, will serve to refresh our readers' memory. Antifebrin, known chemically as acetanilid or phenylacetamid, is a white crystalline substance, and is prepared by heating together a mixture of anilin and acetic acid. It is not probable that impure acetanilid will at present be met with, nevertheless it is well to bear in mind that it may be contaminated by either of the substances employed in its production. The pure drug should be neutral and free from smell; an acid reaction would indicate acetic acid, while anilin may be detected by its smell or by dissolving 1 part of acetanilid in 30 parts of water with heat a clear solution should be produced, but if anilin were present it would be cloudy. Yvron says that anilin may be detected by the red precipitate it forms with hypobromite of potash. When heated on platinum foil, antifebrin first liquefies and then is entirely dissipated; the presence of any inorganic impurity would be indicated by a residue after heating. In using antifebrin it is important to remember that it is not readily soluble in cold water, requiring one hundred and eighty-nine times its own weight for solution, but it dissolves easily in pure ether and alcohol, and is fairly soluble in liquids containing alcohol, as wine. It causes a slight burning sensation when applied to the tongue, but on account of its comparative insolubility the taste is not strong enough to be disagreeable.

Antifebrin is injurious to some of the lower forms of life. Bokai and others have pointed out that it kills infusoria, though spirilla and bacilli continue to move in a five-per-cent. solution. Van Leer, too, has observed that milk does not undergo fermentation if saturated with it, and it will prevent albumen becoming putrid. Destrée and Slosse find that it prevents the development of bacterium æriginosum, but does not destroy it. Dujardin-Beaumetz, however, is of opinion that it is practically devoid of antiseptic power.

Antifebrin even in comparatively large doses has little influence on healthy animals, but in sufficient quantities it will cause death. Herczel found very little effect produced in rabbits by doses of 15 to 25 grains, if given by the mouth on a full stomach; but 15 grains dissolved in warm water and injected subcutaneously diminished, and finally abolished reflexes, depressed the respiration, greatly lowered the temperature, and caused convulsive movements; yet the animal recovered. Larger doses than 5 grains per pound of body weight caused death, and after large and repeated doses, fatty degeneration of the heart, liver, and kidneys was present. Weill finds 2 to 4 grains per pound weight the lethal dose in the lower animals, death being preceded by depression, stupor, anæsthesia of the posterior extremities, collapse, and convulsive twitchings.

On healthy men small doses (2 to 5 grains)

have very little, if any, influence. Barr, Way, and others state that a pleasant sensation of warmth is felt after each dose taken during a feverish condition. Fischer noted the same effect even when there was no fever. Sometimes even very large doses seem to be without influence in health. Weill says he took 60 grains and felt none the worse afterwards, —not the slightest reduction in pulse or temperature could be detected. On the other hand, Mayer records a case in which 30 grains caused serious symptoms in a man affected with bronchial catarrh. In a quarter of an hour he suffered from cold sweats, sleepiness, vertigo, palpitation, and cyanosis. He could not stand or walk straight, and was not himself for several days, yet twenty-four hours before he had taken the same dose without feeling any ill effects. The toxic symptoms, too, vary very much. Dr. Doll, of Berlin, has recorded a case of poisoning by antifebrin in a woman, who seems to have been healthy save for headache. To relieve this she purchased twenty-five pfennigs' (nearly three pence) worth of antifebrin, and took it in one dose. The exact quantity furnished to her was not ascertained, but vomiting came in three hours, with cold sweats and fainting. A few hours later the extremities and face were cold, though the heart was beating violently; the respiration was rapid, and retching and abdominal pain indicated considerable gastro-intestinal disturbance. She lay apparently unconscious, yet could be roused to answer questions, and stated that she felt numb and as if constantly falling. When she recovered, a few hours later, she did not remember anything which had passed during the acute state of poisoning.

The long-continued administration of antifebrin, thirty to forty-five grains daily for six weeks, may, according to Herczel, lead to what he calls aniline anæmia or cachexia, with solution and decomposition of the coloring-matter of the blood. Weinstein, on the other hand, says that persons not suffering from fever may take antifebrin for weeks together without any effect on the circulation.

When the drug is given in doses of 4 to 12 grains in pyrexial ailments, it usually causes perspiration and fall of temperature, accompanied, not unfrequently, by an improvement in the general condition and appetite, occasionally, however, giving rise to unpleasant symptoms. The cyanosis which Cahn and Hepp pointed out as sometimes occurring during the apyrexia produced by antifebrin has since been often noted after 5- to 15-grain doses. Sometimes, too, the pulse becomes arhythmic and collapse may set in. A single dose of 10 grains in a case of phthisis has produced complete collapse, with intermittent pulse and respiration; 9 grains in pneumonia has had the same effect. Hardy stated at a meeting of the Academy of Medicine of Paris, held last February, that he had several times seen evils follow the administration of antifebrin. On one occasion, he said, death followed the administration of fifteen grains of the drug given in divided doses during twenty-four hours, but he gives no particulars in substantiation of his view that death resulted from the administration of the drug. Dulacska, too, has known 3-grain doses produce prostration and cyanosis with irregular pulse.

It is worthy of remark that antifebrin hardly ever causes a cutaneous rash like other antipyretics. Hüber, indeed, says he has met with an exanthem after its exhibition, and so has Eisenhart, but so far it would appear that such an occurrence must be extremely rare. Sometimes the profuse sweating is accompanied by sudamina and redness of the skin.

Though comparatively insoluble antifebrin is readily absorbed, for its effects on temperature are usually noticeable within an hour, and sometimes appear in a quarter of an hour. In children, Widowicz says the temperature fall begins in ten to twenty minutes. Its course in the system has not yet been definitely determined. It undergoes decomposition, for only a small portion can be recovered from the urine; some observers, indeed, as Wendriner and Dujardin-Beaumetz, have failed to find it in this secretion after exhibition. Herczel believes that anilin is set free, though he has not been able to detect it in the blood; but he points out that both drugs produce similar changes in the blood, causing (in dogs at least) solution of the coloring matter. Anilin, however, acts more powerfully than antifebrin. After the administration of antifebrin the quantity of sulphuric acid in combination is found increased, and probably the portion decomposed is eliminated as para-amido-phenol-sulphuric acid. After the administration of anilin, too, para-amido-phenol has been found in the urine. The influence of antifebrin, after absorption, is chiefly exerted on the nervous system and on the circulatory organs.

Cerebro-spinal System.—A direct influence on the cerebrum has not yet been proved, though both a sedative and a stimulant effect have been claimed for antifebrin. Doll thought that the peculiar semi-consciousness

manifested by his patient resembled that seen in the hypnotic state. Sippel considers it possesses hypnotic properties, and Osler and others have also pointed out that sleep is apparently induced by its administration. Cauldwell found it to quiet the nervous system in phthisical, and Widowicz noticed its calming effect when given to febrile, children, while Lépine regards it as a tonic and sedative. But Barr's personal experience leads him to regard it as a nervous stimulant, for when he took it during a febrile attack, a condition of mental exhilaration always accompanied the fall of temperature. It is possible that the removal of pyrexia may in part account for these varied effects, sometimes sleep, sometimes a feeling of well-being and exhilaration, ensuing on the decrease of bodily heat. Where mental phenomena occur apart from a reduction of a febrile temperature, as in Doll's case, they may be secondary to circulatory changes. In the lower animals Weill saw no influence on the cerebrum, and Bokai, too, was unable to find evidence of cerebral influence, though the system was markedly affected. Heinzelmann had seen deafness and mydriasis follow the use of antifebrin ; and Sippel in one case observed deafness accompany feelings of heaviness and vertigo after its administration. Demiéville has known slight giddiness follow its use, and in one case delirium, but this patient was an inebriate and epileptic.

Experiments on animals seem to show that antifebrin interferes with the conduction of both motor and sensory impressions and depresses the reflex excitability of the spinal cord. Biró, on the other hand, saw clonic spasm in the legs of a patient who had taken antifebrin eleven days. Lépine from his experiments on the frog, and Bokai from experiments on the frog and rabbit, conclude that antifebrin paralyzes the motor nerves and nerve-endings. Bokai, too, says that it has this effect ; indeed, he compares its action in the frog to that of curare, and holds that it not only paralyzes the nerve-endings, but decreases the contractile power of muscle. Some of his patients complained of tiredness and weakness after antifebrin, and he attributes this to its paralyzing influence on the motor nerve-endings. Lépine concludes from his experiments on the frog that the sensory nerve-endings are also paralyzed. Herczel finds decreased sensibility to electric irritation produced by it. Bokai thinks that antifebrin acts on the sensory centres in the cord, and attributes to this the defect in reflex movements which he found it cause. Weill noted that sensation was diminished in the posterior extremities of animals poisoned by it. In man the evidence of its influence on the cord or nerve-endings is but slight, but the relief of pain which sometimes follows its use may be connected with its paretic influence on the sensory nervous system, while the loss of power noted in Mayer's case was probably due to its action on the spinal cord or efferent nerves. Faure says his patients complained of pricking and irritation in the legs, and lassitude.

Circulatory System.—The circulation is very markedly influenced by antifebrin, the amount of hæmoglobin is lessened, and spectroscopic investigations made by Aubert in Lépine's laboratory showed that in the dog (not in the guinea-pig) a change of the hæmoglobin into methæmoglobin takes place. Henocque observed this change in a man in whom a cyanotic condition had occurred under doses of 15 to 20 grains daily, and the same thing has been noted by Fischer. The red corpuscles are altered in form, and perhaps in part dissolved, for Bokai finds that a .6-per-cent. solution, containing .5 per cent. of antifebrin, will, outside the body at least, dissolve the blood-corpuscles of both man and the lower animals. Antifebrin likewise stops the amœboid movements of the white blood-corpuscles. Lépine, like Herczel, attributes to its solvent action the anæmia which he says prolonged administration of antifebrin sometimes causes.

The action of antifebrin on the heart varies, of course, with the dose in which it is given. The isolated frog's heart, according to Lépine, beats more strongly under its influence ; and he says, too, that full doses render the heart's action in the guinea-pig slower, but may either quicken or slow the heart of the dog, though it makes the beat stronger. There is a general consensus of opinion that in pyrexia, at least, moderate doses of antifebrin render the heart's action slower. Riese, Hüber, and others think the frequency of the heart's beat falls in accordance with a fall of temperature, but Pávai-Vajna holds that the fall of temperature and pulse-rate is not proportional. Faust, too, found some slowing of the pulse in non-febrile cases where the temperature continued unchanged. Cauldwell, who has given the drug extensively in phthisis, thinks it diminishes the pulse frequency and strengthens the heart-beat. On the other hand, Weill describes the heart's action as at first quickened and

strengthened, though, later on, it becomes slow and irregular, and Faure, in epileptics, finds the heart's beat accelerated.

In the two poisoning cases which have been alluded to, the pulse was increased in frequency; in one it is said the energy of the heart was increased, in the other the pulse is stated to have been small as well as frequent. Perhaps the varying amounts given account for the differences here noted; but it seems probable that in ordinary medicinal doses the heart's action is rather strengthened than weakened. On the other hand, large doses undoubtedly depress the heart and lead to collapse. Riese found the pulse fluttering and arhythmic in one of his cases after antifebrin; and Herczel, in the rabbit, notes that the heart ceases to beat in diastole. It seems probable that, when the heart's action is already weak, ordinary medicinal doses may have a powerfully depressing effect; Biró saw 7½ grains cause weak, irregular pulse.

The influence of antifebrin on the vessels and on arterial tension, however, requires further investigation. It is generally considered that the cutaneous vessels are at first dilated by it, and Filetti even describes reddening of the surface, which, however, others have not seen. But Bokai, and Destrée and Slosse say the arteries contract after antifebrin has been taken; and Herczel saw the dilated vessels of a rabbit's ear become distinctly less in calibre. The majority of observers find arterial tension increased by the drug (Krieger, Faust, Hinsberg, and Kast, Murray, Riese, Berezovski, Weinstein, Sippel). Berezovski says he proved this increased tension by careful investigations with the sphygmometer; Weinstein finds that the tension only rises at first, but is afterwards uninfluenced; Destrée and Slosse think it is temporarily lowered; Faust says it is eventually decreased. According to Hare, the tension is sometimes increased, sometimes lowered; Faldella and Butta state that it is sometimes lowered; whereas Fraenzel alone seems to think the tension is always lowered.

The cyanosis, which has already been alluded to as occasionally occurring after medicinal doses of antifebrin, does not point to any serious evil produced by the drug; it passes off quickly when the administration ceases, and is rarely accompanied or followed by other unpleasant symptoms, though collapse has been known to occur with it. It has usually been produced when the dose given has exceeded 7 grains, but Pávai-Vajna met with it occasionally, though he only gave 4 grains three times daily. Krieger, who gave large doses—12 to 18 grains——met with it more frequently; Osler, who used doses varying from 6 to 12 grains, met with it only once in thirty cases to whom he gave the drug; Hüber once in twenty-one cases. It seems to occur most often in phthisical cases, and may appear after one large dose, or at the end of three or four days after small doses. The cause of the cyanosis is uncertain. Faust thinks it is due to the dilatation of the cutaneous vessels; Weinstein to retardation of the blood flowing in the vessels; Krieger to some product of the decomposition of antifebrin other than aniline. Bokai is of opinion that it is due to the influence of the drug on the respiratory organs and to vascular spasm. It has likewise been attributed to the presence in the blood of methæmoglobin, and Henocque says he has only detected methæmoglobin when cyanosis has supervened; when no methæmoglobin could be detected in the blood cyanosis has been observed; and, on the other hand, methæmoglobin has continued present after cyanosis has passed off. Temperature is lowered by antifebrin, both in pyretic and apyretic conditions, but, as a rule, much more markedly in the former than in the latter; the higher the temperature the more energetically it acts (Faust). Weill and Faust, indeed, find no temperature decrease produced by the drug in non-febrile cases, but Faletta records a reduction; and, as in the lower animals, decrease in temperature seems always caused if the dose be large enough, it is probable that a sufficient quantity would invariably lower the body heat in healthy men.

The time at which the fall commences, when the drug is given in pyrexia, varies considerably. Cahn and Hepp said the maximum lowering occurred in about four hours, and the effect lasted three to ten hours, according to dose. Weill has observed a slight decrease in a few minutes, and Widowicz says in children it commences in from ten to twenty minutes; Barr, who took it in capsules, found an hour to an hour and a half to intervene before it affected the temperature. Osler noticed a reduction, usually within an hour; at the end of this time, he says, the fall may amount to from 2° to 4°; often the greatest reduction is at the end of the second hour, and the temperature may sink for four or five hours, or even longer. The duration of the reduction is usually from three to six hours; but, of course, much depends on the dose

and the ailment. Berezovski, giving 4-grain doses, noted a fall of .5° to 2° in an hour, and the duration of the reduction was one and a half to three hours. Krieger, who gave 12- to 18-grain doses, saw the reduction most marked in three hours, but it lasted six to ten hours. Not unfrequently the temperature is brought 1° or 2° below normal. Faust finds the pyrexia in the morning more readily affected by antifebrin than in the evening. Sometimes the influence of the drug appears to last even longer than Krieger states. Matusofsky thinks he has seen the effects of 7 grains the day after giving it. Failures are of occasional occurrence with antifebrin as with every other antipyretic. Osler, who treated twenty-nine patients, suffering from various febrile ailments, with the drug, found 8 grains entirely without influence on the temperature in seven cases. Two of these suffered from pneumonia and two from erysipelas; Hüber, too, found seventy grains in a day fail in a case of pneumonia, but here antipyrin was equally ineffectual. Hare points out that antifebrin possesses little or no power to reduce the pyrexia caused by the injection of pepsin into the blood.

When the temperature rises again, chilliness is sometimes noted, but rarely rigors. Almost all observers agree that shivering is less common after antifebrin than after kairin, thallin, and antipyrin. Osler only saw it three times while treating thirty patients with the drug. Hüber records its occurrence as not infrequent.

The cause of the temperature fall produced by antifebrin has been investigated experimentally by Hare, Evans, Bokai, and Filetti. Hare concludes that in healthy animals it is due to both decreased production and increased dissipation; but in fever, chiefly to lessened heat production. Evans, experimenting on healthy animals, and on animals in which a febrile condition had been caused by injection into the blood of a pyrogenic agent, *deutero-albumos*, found that in the former the loss of temperature is chiefly due to an over-increased heat dissipation, aided in half the cases by a decreased heat production. He infers from his experiments that in man its antipyretic effect in fever is due to the reduction it causes in the amount of heat produced, but whether this reduction is due to the direct stimulation of the inhibitory heat-centre, paresis of the spinal heat-centres, or by an action on the tissues themselves, remains to be demonstrated. Bokai, too, looks on lessened heat production as the cause of the antipyretic action of non-toxic doses, though he thinks that toxic doses may aid by causing vascular paralysis, and hence increased heat dissipation. Filetti has arrived at different conclusions. After giving antifebrin in cases of pyrexia, he took simultaneous measurements of temperature every five minutes in the axilla and on the forehead, dorsum of foot, and other superficial parts. He found the temperature in the axilla, after rising a few tenths of a degree, sink 2° to 3°, while the peripheral temperature rose rapidly 4° to 5°, and even higher, and only began to fall after the sinking of the axillary temperature. Similar phenomena were observed in health after antifebrin. The reddening of the skin, which is alluded to by Cahn and Hepp and by Filetti points to the influence of antifebrin in dilating the cutaneous vessels. He considers that temperature fall, both in pyrexia and in the normal condition, is due chiefly to increased dissipation of heat, but there is also diminished heat production, since enclosing animals poisoned by antifebrin in cotton-wool will not prevent temperature fall. It is worthy of remark that Filetti's experiments with the plethysmograph hardly support his conclusions, since only a very inconsiderable and passing increase of the volume of an extremity was shown by it during the action of antifebrin. As a rule, the fall of temperature is accompanied by a profuse perspiration, which is, indeed, not unfrequently one of the first effects noted. Osler finds that atropia does not check it, but, according to Cauldwell, it is controlled by agaricine. Weill says that in the lower animals the peripheral temperature falls first.

Digestive Organs.—Although vomiting has been caused by toxic doses, it is extremely rare to meet with stomach irritation after such amounts as are given medicinally. Even with the large doses which Krieger gave (thirty to sixty grains daily, and sometimes more), only one case of vomiting occurred, and this probably was not due to the medicine. Sippel, too, met with it once. Demiéville, who gave large doses in nervous diseases, mentions that antifebrin occasionally gives rise to loss of appetite, dyspepsia, and even nausea and vomiting. But such results must be uncommon, since the majority of observers find it free from all irritating qualities, so far as the stomach is concerned.

Respiratory Organs.—In large doses (thirty to sixty grains daily), Riese noted increased

frequency of the respiration, the breath-sounds being fuller and deeper. Sippel and Ademski find the respiration diminished in frequency. Bokai believes that it paralyzes the nerve-endings of the respiratory muscles and the respiratory centre. It seems probable that, as Pávai-Vajna thinks, antifebrin, in ordinary doses, influences the respiratory organs but little; in toxic doses it is a respiratory poison, though not one of great potency. In the rabbit, according to Herczel, the respirations are first rendered superficial and frequent; afterwards they become irregular, and then cease.

Urinary Organs.—There is no evidence that antifebrin is an irritant to the healthy kidney. Riese saw albuminuria occur in a case of acute rheumatism after full doses, but it appeared together with the advent of an endocarditis. He noticed occasional diuresis, usually moderate in amount, but in one case the urine increased from fifteen hundred cubic centimetres to three thousand centimetres after fifteen to twenty-two grains daily. There was in this case no change of temperature and no sweating. Barr, Osler, Ademski, and Cauldwell likewise find antifebrin act as a diuretic, and Cahn and Hepp thought they noticed some increase in the kidney secretion produced by it. On the other hand, Lépine and Weill hold that it decreases the secretion of water. Berezovski finds the urea decrease with the fall of temperature. Bokai considers that after the administration of antifebrin the amount of nitrogen in the urine is diminished; Ademski that the urea is increased, but the total quantity of nitrogen decreased. After large doses, Herczel found the coloring-matter of the blood present in the urine. Salm, too, notes that the urine is occasionally high-colored after giving the drug, but in this high-colored urine he could not detect methæmoglobin.

Therapeutic Uses of Antifebrin.—The statement made by Cahn and Hepp that antifebrin reduces fever in many ailments without producing unpleasant results has been frequently substantiated by subsequent observers. In typhoid it has been commended by most who have tried it, but only for its temporary influence in reducing temperature. It has no effect on the disease itself. Lépine recommends 8 grains an hour before the time at which the temperature usually reaches its highest point. He states that in those severely ill he has noticed cyanosis and lessening of the secretion of the urine. Mousset, who worked under Lépine, recommends two such doses daily, and a third when the system gets accustomed to the drug. But by these amounts cyanosis was produced three times in seven cases. In a case of relapse under Riese, the exhibition of the drug was followed by arhythmia and fluttering of the pulse, but here probably a full dose was given. Osler in twenty-nine cases had to cease giving the drug because of the profuse sweating 8-grain doses produced. Faust in three out of twenty-nine cases noticed loss of effect from habituation. Way, who used it in thirteen cases, speaks highly of the effects of small doses. He gave 2 to 3 grains three times daily, at 1 P.M., 5 P.M., and sometimes at 9 P.M. The small doses brought down the temperature 1.8° to 3.4° without any evil effects. The patients, indeed, he says, looked forward to the doses, as they felt their condition improved by it. Muttering delirium when present was quieted, and sleep produced. Smith finds antifebrin relieve the frontal headache and soothe typhoid patients. Ginsberg gave 3¾ grains to 7½ grains, and repeated the dose in six or seven hours if necessary; the larger dose brought down the temperature 3½°, but it began to rise again in a half or three-quarters of an hour. Thirty grains a day he found had no evil effect. Very copious sweating sometimes occurred, and sometimes during the rise of the temperature the patient suffered from rigors. Guttmann treated eighty-one cases of typhoid with antifebrin; he gave 7 grains night and morning. By this means, he says, the patient got a six hours' fever-free period. About the twelfth or fourteenth day, one dose daily was only required. In scarlet fever, Ginsberg says, antifebrin acts better than antipyrin. Widowicz also speaks highly of its value. In measles, too, he finds it useful as an antipyretic. Antifebrin has also been given in erysipelas and puerperal fever. It has been found useful in virtue of its power of reducing temperature for a short period, but in none of these ailments has it seemed to influence the course of the disease.

In intermittent fever Lépine found it checked the paroxysm without producing cyanosis. Weinstein, too, got good results from its use, and thinks it led to the diminution of a splenic tumor. Hüber used it with advantage, but, as might be expected, he did not find it a preventive like quinine. Osler, in one case in which he tried it, found it was of no use as a febrifuge.

In smallpox Haas saw it lower the temperture in confluent cases and relieve the nervous disturbance. He thinks, too, it prevents to

some extent the injurious tissue-changes which are apt to occur in smallpox. In anæmic people he noticed chills occur when the temperature rose. In rheumatic fever Riese used it in ten cases, but could not suppress the fever as long as the joints were affected. Pávai-Vajna found it as valuable as salicylate of soda, but it did not prevent endocarditis. Weinstein looks upon it as a specific in acute rheumatism; in subacute and chronic cases he says it eases pain, but does not influence the disease itself. He gave 4 grains at intervals of two hours, but not more than fifteen to twenty-two grains daily. Guttmann speaks in the highest terms of antifebrin in rheumatism. In a few cases it failed, and in these, and in relapses after taking the drug, he found salicylic acid and antipyrin more useful. It relieves, he says, rheumatic pains of muscles, bones, and joints. He used it in two hundred and forty-eight cases, of which eighty-one were acute and one hundred and sixty-seven general. The dose he employed was 7 to 15 grains twice, rarely three times, daily; never exceeding forty-five grains in any one day. Its action he found to be prompt, and it often succeeded when salicylic acid had failed. He saw no heart-trouble occur under its use, even when relapses occurred. Cahn and Hepp, Landgraf and Riese also speak highly of its value in rheumatism; they find it not so prompt in action as salicylic acid, but less productive of evil effects. Snyers and Sarda find it, on the whole, inferior as an antirheumatic to antipyrin; in chronic rheumatism Sarda says the two drugs are equally useful, in muscular rheumatism antipyrin is far the best. Faldella and Butta find salicylic acid superior to antifebrin.

In phthisis, most observers agree that antifebrin acts powerfully in reducing temperature. Riese, however, points out that in this more than in any other ailment it is liable to cause cyanosis; and Weill, though from a limited experience (two cases), thinks that, owing to the limited duration of its action and the profuse sweating which followed even 4 grains, it cannot be advantageously used in tubercular affections. Cauldwell, after trying it in thirty cases, comes to the conclusion that it is the best drug wherewith to control fever and its concomitant evils in phthisis. In nine cases with slight consolidation he gave 7 grains four times daily in one ounce of champagne. In all the general condition was decidedly improved by it. To eleven cases, with considerable consolidation, he gave 10 grains twice daily (8 A.M. and 4 P.M.) in dilute whiskey; twice cyanosis followed, and in several free sweating occurred, controlled by $\frac{1}{8}$ grain of agaricine at bedtime. In ten cases, with cavity, he found restlessness, chills, and fever removed by the same dose of antifebrin, combined with $\frac{1}{4}$ grain of agaricine, a little aromatic ammonia being given at the same time. Dr. Cauldwell is of opinion that the drug is apt to cause temporary depression, which is prevented by giving it with a stimulant, but the ultimate effect is to diminish the frequency of the pulse, strengthen the heart's action, improve the appetite, and quiet the nervous system, without causing any unpleasant result excepting cyanosis, which, however, he only met with twice in thirty cases. Osler says that 4 to 5 grains three times a day are not so useful in phthisis as single daily doses of 8 grains, and Guttmann finds that as much as 15 grains is sometimes required to subdue the hectic fever of phthisis. Vaezi found in one case a combination of antifebrin and quinine (15 grains of each in an hour) useful in reducing a continued high temperature in lung-disease, which quinine alone did not influence. In pneumonia several observers record failure of the drug to reduce temperature. In a case of Osler's it failed in three administrations out of six, and Riese noticed its influence on temperature in this ailment was of short duration. Pávai-Vajna considers its influence is not favorable, and in one case it seemed to prolong the course of the disease. The drug has been thought useful in such lung-ailments as bronchial catarrh and pleurisy. In febrile catarrh with slight bronchitis in children it is of especial value.

Though introduced at first only as an antipyretic medicine, antifebrin has since been strongly recommended, especially by French observers, as a sedative to the nervous system. In locomotor ataxia its value was first affirmed by Lépine, who found that 8 grains relieves in half an hour the lancinating pain commonly present in this ailment; in relieving gastric crises, however, he does not find it of service. Dujardin-Beaumetz and Demiéville confirm its utility in this ailment, and Fischer, who administered it to ten patients, says it gave relief to the pains in nine of them, 12 grains usually removing pain in thirty to ninety minutes. A second and smaller dose was sometimes required. Antifebrin has likewise been found useful by Demiéville in relieving pain in many cases of sciatica, lumbago, intercostal and trigeminal neuralgia, and other nervous ailments.

Fischer records its successful use in (1) a

case of syphilitic neuralgia, which inunction had not cured; (2) in three cases of headache, with anæmia; (3) in four cases of hemicrania. In two of these cases antifebrin was used successfully in preventing the attacks. At times, however, in similar ailments the drug failed to do good, but the failures were only one-third as numerous as the successes. The drug has been found useful in relieving some cases of obstinate pruritis. Hamilton finds that antifebrin quickly aborts the paroxysm of angiospastic migraine with evidence of anæmia, dilated pupil, coldness, and headache commencing in the morning. In several forms of headache he found it fail, and in some cases it even increased headache, as, for example, in a woman with occipital headache, and another with congestive headache. He finds both antipyrin and antifebrin useful in headaches attended by anæmia, or in the excitement due to cell malnutrition, attended by exhaustion. Krieger, Dulacska, Ott, and Sippel record its value in facial neuralgia, and Faust says it is more useful than salicylate of soda, antipyrin, quinine, caffeine, or guarana in migraine and many forms of headache, though it is ineffectual in pain due to organic cerebral disease. Herczel gives similar evidence. He got excellent results from its use in neuralgia of various kinds, and in radiating pain due to periostitis, osteitis, caries, etc. He says, however, that in hemicrania and headache *having an intra-cranial cause* it was specially successful, and at times succeeded where bromide, caffeine, quinine, and antipyrin had failed. Ott and Weinstein recommend it in hemicrania. Leedy found antifebrin relieve nine out of fifteen cases of supraorbital and suboccipital neuralgia, and in two cases of intercostal neuralgia it gave immediate relief. In five cases of nervous headache great benefit was obtained from it, but it was only of value in eight out of seventeen cases of sciatica. Out of ten cases of lumbago seven were relieved temporarily and two permanently by it, and six cases of rheumatic pain were benefited by it. Ott found it relieve pain in dysmenorrhœa. In epilepsy opinions vary much as to its value. According to Demiéville and Dujardin-Beaumetz it is useful in diminishing the attacks, and Ott and Weinstein likewise speak favorably of it. Hamilton says it is only useful in slight cases; Faure, that it is useless. It has been used in many other nervous affections. Lépine found it relieve the tremors of sclerosis; Ott thought it of use in chorea. Like Lépine, he found cases of *petit mal* improved by it. Faust and Denny treated five cases without any success, and Salin also found it of no value. Leedy, in thirty-six cases, found it useful in fourteen, while it seemed to aggravate the attacks in four. Hammond finds it of little use in affections of the nervous system (*New York Medical Journal*, xlv., p. 472). Sarda thinks it calms motor excitement.

As a hypnotic it has been highly spoken of by many observers in affections of the nervous system, as well as in febrile conditions. Kell records a case of acute alcoholism, with rapid pulse and high temperature, in which sleep followed two doses of 10 grains, and became profound after a third dose. The temperature fell, and the pulse became less frequent and stronger. The patient woke, after a five hours' sleep, much better. Heczel finds it useful as a sedative in the insomnia and general nervous irritation after operation. Leedy considers antifebrin of doubtful value as a hypnotic in diseases of the nervous system.

As an external application antifebrin has not been extensively employed. Guttmann has employed it in the form of powder as a dressing for wounds, and, he thinks, with benefit. He says it leads to the formation of an antiseptic scab. Krieger, too, thought it a useful antiseptic dressing dissolved in collodion. Trüsheinikoff recommends it as a gargle in inflamed sore throat.

Dose.—Some diversity of opinion exists as to the amount of the drug which may be safely given, and as to the dose it is advisable to commence with. Riese gave as much as ninety grains in a day without apparently producing any serious ill consequences, while Hardy, as we have seen, found fifteen grains in one day lead to a fatal result. 2 to 5 grains is said by Trüsheinikoff to act efficiently as an antipyretic, while Krieger thinks it as well to begin with from 12 to 15 grains. Biró thinks 1½ grains are as effectual in some as 10 or 11 in others. The majority of observers seem to look upon 4 to 7 grains as a suitable dose in febrile cases, which may be repeated two or three times, but, as a rule, thirty grains per diem is a sufficient quantity; much, however, depends on the ailment. Phthisical, weakly, and anæmic patients seem easily affected by antifebrin, and to require small doses. Large quantities are apt to cause cyanosis, cardiac weakness, and collapse. In typhoid, too, 4 grains every six or eight hours are often sufficient. In rheumatic fever and pneumonia larger doses are usually required. For the relief of pain in neuralgia, etc., from 8 to 15

grains may be given for a dose, and usually no grave evils seem to occur from forty to sixty grains daily. Ademski finds that in doses of 2 grains it efficiently reduces temperature. And even Dulacska thinks he has seen less than a grain every two hours cure neuralgia. Many writers—Faust, Weill, Demiéville—allude to the occasional establishment of tolerance after the drug has been taken some time, and this may call for a temporary cessation of its administration. Children seem to bear antifebrin well, and Widowicz, who has had extensive experience of its employment in the febrile diseases of children, says that 1½ grains may be given to those aged 3 or 4 years, while doses of 3 or 4½, or even 7½, grains may be administered to older children. Small doses usually sufficed for poorly-nourished children. Faust recommends as many centigrammes as the patient is years old; and Smith, ½-grain doses for children of 1 or 2 years.

Method of Administration.—The drug is well taken in the form of powder or in cachets. It may also be given dissolved in wine or spirit and water. Eisenhart has administered it per rectum, and finds that, given in this way, it reduces febrile temperatures in doses of 4 to 8 grammes, usually acting in two hours.

EXPERIMENTAL RESEARCHES ON THE VIRULENCE OF TUBERCULAR MATTER.

In inquiring into the origin of epidemics, it is felt how necessary it is to recognize the channels of diffusion and the vital resistance of the infectious microbes. The germ of glanders possesses but little vitality; desiccation kills it; putrefaction shortens its life; and the chances of infection, when not immediate, diminish, and rapidly disappear as time proceeds. The germ of tuberculosis, on the contrary, realizes a collection of conditions eminently favorable for more remote infection, for it survives the majority of microbes usually associated with it. Neither drying nor putrefying appears to destroy it, while both processes often allow of its being distributed through air or water. MM. CADEAC and MALET (*Lyons Médical*, No. 25) have sought to discover the time required to destroy the germs of tuberculosis in desiccated, putrefied, or frozen matter. The experiments prove that tubercular matter dried and pulverized may preserve its virulence, since one hundred and two days after its preparation it was capable of transmitting tuberculosis. Schill and Fischer maintain that tubercular matter only loses its virulence after six months. Pietro asserts that well-dried sputa may remain infective for nine or ten months if maintained at a mean temperature of 25° C., but it appears probable to MM. Cadeac and Malet that the virulence does not persist after thirty or forty days, unless special care is taken to preserve it. M. Galtier has found tubercular matter to be virulent after fifteen days, one month, and thirty-eight days of desiccation. These somewhat conflicting results are sufficient, however, to show the desirability of completely destroying all the tubercular matter ejected from patients, and is also an argument in favor of cremation. MM. Cadeac and Malet find that the virulence is maintained for one hundred and fifty days in pieces of tubercular lung exposed during winter and spring to the atmosphere. When dried pieces have a considerable volume, the virulence lasts longer than when the matter exists as fine dust. It is probable that the rapid disappearance of virulence in the fine dust is due to the action of the oxygen of the atmosphere, which is enabled to come into direct contact with all the tubercular molecules. As to the influence of putrefaction, one hundred and sixty-seven days appeared to be the limit of tubercular virulence in tubercle allowed to putrefy by itself. About one hundred and twenty days was the duration of virulence when the tubercle was allowed to decompose in water. Tubercular liquids exposed to the air and to various external conditions more rapidly lose their virulence than do tubercular solids. In other words, putrefaction exercises much more rapidly its destroying effects when the putrescible mass is of but little volume. The duration of the preservation of virulence in hard and compact tissues like the tubercular lungs of ruminants is also proportional to the size of the organ submitted to putrefaction. It is the same to a certain degree for tubercular matter submitted to the process of desiccation. In the numerous experiments from which the above conclusions were arrived at, the pieces of tubercular lung were kept at a temperature from 1° to 8° below zero, in such a fashion that the matters remained frozen sometimes for more than a week. Yet virulence was maintained for seventy-six and one hundred and twenty days.—*Lancet*, June 30, 1888.

TUBERCULOUS ULCERATION OF THE VULVA.

Dr. M. Zweigbaum, of Warshan, records a case of this rare manifestation of tuberculosis in the *Berliner Klin. Wochenschrift*, May 28, 1888. The patient came under his observation in 1885, but the year before had been treated for fungous ulceration of the vaginal portion of the uterus. Paquelin's cautery was used, and the patient was discharged "cured." She was 32 years old, and had had five children. On admission under Dr. Zweigbaum's care there was a deep, painful ulcer just within the left posterior vaginal wall, forming a cavity an inch and a half long and an inch deep, together with cauliflower excrescences of the portio vaginalis. The left labium minus was almost destroyed by ulceration, and microscopic examination of a portion revealed abundant tubercle-bacilli. The apex of the right lung showed obscure signs of phthisis on auscultation and percussion. The spleen was somewhat enlarged, and the patient was feverish. In five months death ensued from exhaustion, the lungs having shown further alterations. There had been purulent expectoration, and towards the end œdema of the lower limbs. Syphilis was positively excluded in this case, which was examined by several colleagues. Dr. Zweigbaum has carefully examined the literature of the subject, and finds only two cases of tuberculous ulceration of the vulva recorded (Deschamps, Chiari). Taking into account the vagina and cervix uteri, twenty-nine cases of primary disease are recorded by various observers, and a short synopsis of each case is here given. The disease is by no means rare in the course of general tuberculosis, but is rare when primary. Cohnheim gives one case, Fernet four cases, of infection by coitus. Others are ascribed to examinations, syringing by nurses who are tuberculous or much in contact with tuberculous patients. Numerous cases are recorded as having occurred immediately *post partum*. Intercourse with phthisical patients appears also to be more or less dangerous; for example, by the use of the same bedclothes, closets, or baths. Auto-infection may also occur from the sputa or fæces, and thus a secondary tuberculosis may be set up. Frerichs disputes the possibility of infection from without, and argues that it takes place by conduction from the Fallopian tubes, more rarely the uterus. The stages successively occupied by infectious material are very difficult to make out, because each organ or part successively traversed may show no trace of the virus afterwards, the nidus being unsuitable. We do not yet know the conditions which favor the establishment of the tuberculous process in a particular part. It is probable that certain pathological processes induce a predisposition for tuberculosis, as in the lungs. Thus comments Dr. Zweigbaum on his case, which teaches us above all the value of cleanliness, or rather the great dangers which attend its absence.—*British Med. Journ.*, June 23, 1888.

PALPATION OF THE UTERUS MADE EASIER BY EXTENSION OF THE RECTUM.

According to the Vienna correspondent of the *Lancet* for June 2, 1888, a new method for facilitating the palpation of the uterus and the ovaries in cases where this mode of examination is made difficult by any peculiarity of the internal genital organs or by diseases has been devised by Dr. Emerich Ullmann, assistant of Professor Albert. At the meeting of the Vienna Gynæcological Society he suggested the introduction of a colpeurynter containing 200 to 250 cubic centimetres of water into the rectum in cases where palpation of the pelvic organs is impossible under ordinary conditions. By this application of the colpeurynter, as had been proved by Ullmann's experiments made on the cadaver and on living persons, the uterus and the ovaries are raised and brought into an anteverted position, so that, by pressing down the uterus against the touching finger, with the hand resting on the abdomen, it is possible to examine minutely from the vagina both surfaces of the uterus, the ligaments, and the ovaries, if the bladder is emptied.

A NEW ALKALOID IN TEA.

At the meeting of the Berlin Physiological Society on June 8, Professor Kossel reported on a new base, discovered by him, in extract of tea. Caffein is the only definite chemical base hitherto isolated from tea, and to it are ascribed many of the effects of tea. Professor Kossel has found another base in very small quantity, having the composition $C_7H_8N_4O_2$, upon which he has bestowed the name "theophyllin." It is isomeric with the base obtained from cacao (theobromin), and with paraxanthin obtained from urine by Salomon, but differs from these substances by its reactions. The introduction of a

methyl group into theophyllin converted it into caffein, and as the latter is proved by E. Fischer to be a trimethylxanthin, the former is evidently a dimethylxanthin. Investigations into its physiological effects will be made. —*British Med. Journ.*, June 30, 1888.

A NEW ANTISEPTIC SURGICAL DRESSING.

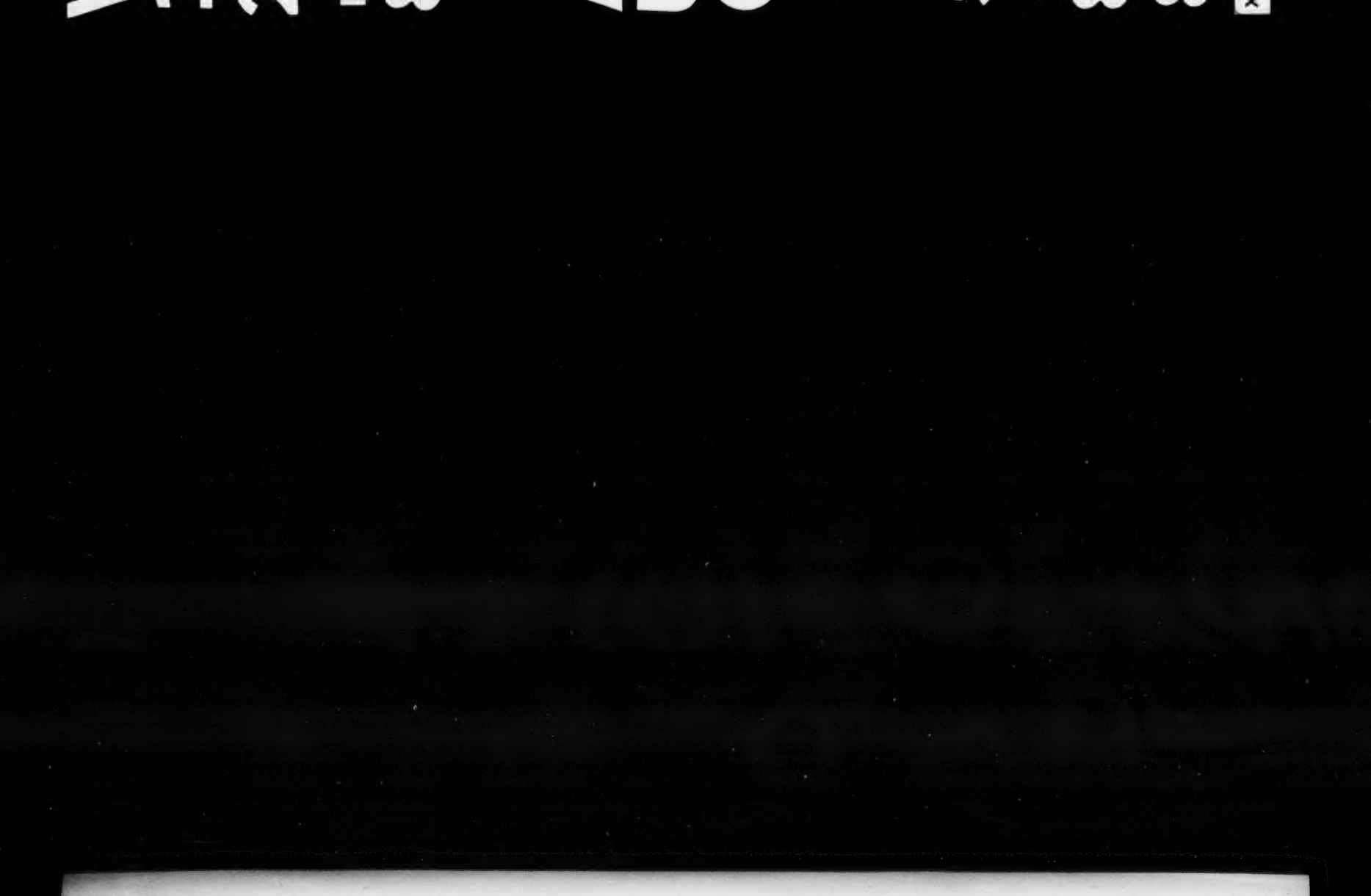
China grass is a soft, silky, very highly absorbent fibre used in various manufactures. The combings form an elastic silken wool, which, when treated with four per cent. of salicylic acid, provides an excellent antiseptic absorbent surgical dressing, besides being much cheaper than any of the usual dressings used in surgery. Mr. H. Bendelack Hewetson states in the *Lancet* for June 23 that he has given this dressing an extended trial, and is highly satisfied with the results. Its chief value is the way in which it absorbs discharges from a wound, rendering it very dry, and preventing the poulticing of the wound, as it were, when bathed in discharges under less absorbent materials. A considerable quantity is required in cases where the discharges are free, and it is perhaps well to interpose some open-meshed gauze between the dressing and the wound, so as to prevent the China grass from sticking to the wound when removed. He has also observed that under the pressure of bandaging the material still retains its absorbent qualities, and does not cake when properly teased out before use.

ETIOLOGY OF PURULENT BRONCHITIS.

Professor S. V. Levashoff describes in the *Ejenedêlnaya Klinicheskaya Gazeta* an interesting case of purulent bronchitis occurring in a medical man, which may help to throw some light on the etiology of this disease. The patient was a man of 53, who had always enjoyed good general health, and had had no diseases of the respiratory organs, but had suffered occasionally from attacks of quinsy. In October last, after having been a long journey in Siberia, he began to suffer with rigors at night and sweats in the morning. Some days later cough came on, and he noticed a very foul smell in his mouth; he also began to expectorate a quantity of dirty gray mucus, which had the same foul odor, the sputum at times containing small lumps looking like bits of half-burnt rag. When he came under Professor Levashoff's care he was evidently suffering from purulent bronchitis, the chief seat of the affection being in the left lung. Professor Levashoff took the utmost pains to find a means of accounting for the invasion of the disease, and at last came to the conclusion that something must have been introduced into the lungs from the outside which had caused the purulent secretion. On questioning the patient, he found that, when travelling in Siberia, in order to protect himself from the severity of the weather, he had covered himself with furs, felt mats, and other articles which are capable of conveying septic material, and it was doubtless in this way that the purulent bronchitis was brought on. The treatment adopted consisted chiefly of turpentine and carbolic acid inhalations, terpin, quinine, and narcotics internally, and energetic frictions with turpentine and lard over the chest. The disease presented a regular series of rises of temperature, with every third day copious discharges of purulent sputum, sometimes mixed with large quantities of blood. Notwithstanding all these very grave symptoms, complete recovery took place.—*Lancet*, June 9, 1888.

ICHTHYOL IN ERYSIPELAS.

Bylieff, according to the *Lyon Médical* for June 25, 1888, states that he has employed ichthyol and ether each 10 parts, in collodion 180 parts, as a local application in a case of erysipelas occurring in a little girl 2 years of age. Cure is stated to have occurred upon the next day. Sorokine is also quoted as having had an equal success by the employment of an ointment composed of equal parts of ichthyol and vaseline in the treatment of a case of erysipelas following anthrax.

BOLDOIN AS A HYPNOTIC.

According to M. Juranville, boldoin, the glucoside of boldo-leaves, far exceeds in its hypnotic and narcotic action opium, chloral, or any other similar agent (*Chem. Zeit.*, June 17, p. 166). The quantity that can be administered to invalids daily without ill effects is stated to be as much as 5 to 10 grammes (75–150 grs.) The yield of boldoin from the leaves is given as three per cent. It may be mentioned that the hypnotic action of this glucoside was observed by Dr. Laborde at the time of its first discovery, four years ago. —*Pharm. Journ. and Trans.*, June 30, 1888.